Housing
Programs
Income
Distribution
in Ontario

ONTARIO ECONOMIC COUNCIL RESEARCH STUDIES

HOUSING PROGRAMS AND INCOME
DISTRIBUTION IN ONTARIO

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Preface

In the early 1970s the price of owner-occupied housing was rising dramatically, housing policy was in turmoil, and not only alarmists claimed there was a housing crisis. This sense of crisis has now passed, and many of the programs initiated during the 1970s have been discontinued. Housing policy is being rethought, and new arrangements are being negotiated between the various levels of government. It is therefore a good time to evaluate the housing programs of the last several years, and this report looks at their impact on income distribution. The intended audience is not restricted to economists in university and government but it is hoped will include a broad spectrum of persons involved in housing issues.

The bulk of the research was conducted while I was on the staff of the Ontario Economic Council. My time at the Council was a unique opportunity to apply economic analysis to policy issues, and I am especially grateful for it. My colleagues at the Council and the participants at the various review seminars offered many helpful criticisms and suggestions. Aron Gampel provided diligent and capable research assistance and was the author of appendix A, which outlines the housing programs not examined in the text. After I left the Council its support and encouragement continued while the work was completed.

Finally, I would like to thank the reviewers of this monograph, the commentators at various seminars where parts of this material were presented, and many people at Central Mortgage and Housing Corporation and the Ontario Ministry of Housing who helped me to understand existing policy and its evolution and assisted me in collection of the data.

HOUSING PROGRAMS AND INCOME DISTRIBUTION
IN ONTARIO

1
Introduction

Canadian housing policy has evolved considerably over the last twenty-five years. Concern has moved from housing for returning veterans to the living environment of all households, especially those on low incomes. Where the government used to act merely as banker and facilitator of the private sector it is now expected to redistribute resources and intervene actively in the housing market. The expansion in the government's role can be amply seen in federal lending: in 1954 CMHC advanced less than $40 million in loans, in 1975 more than $1.4 billion, thirty-five times as much. How has this massive expansion affected the distribution of income in Ontario? To answer that question this report examines the evolution of Canadian housing policy and takes a detailed look at specific government housing activities.

The growth of public intervention in the housing market has been part of the larger evolution of the welfare state. Every citizen in the affluent society was felt to merit an adequate standard of living; there ought not to be poverty in the midst of plenty. Housing, like health care and education, was deemed a right for all, and the public sector acted to secure and monitor it.

In recent years, the welfare state has been scrutinized and challenged. But this does not mean public policy will in future place less emphasis than before on income distribution and individual welfare; there may well be more. Redistributive programs may cease to proliferate, but the question of equity will remain central.

The recent period of slower growth has sharpened the debate about whether income redistribution can only occur at the expense of economic growth. Some observers assert that such a tradeoff exists and re-emphasize growth; others argue that growth and redistribution can happen together and press for further social programs. Most economists predict slower growth for Canada over the next few years, and some even argue it will become permanent because of energy and

environmental constraints. At such times the question of income distribution becomes important because absolute gains by any group must come at the expense of another.

There are signs that people are becoming more concerned about their 'share' and are organizing for collective political action to defend their positions. Doctors, university professors, and even those atomistic competitors the small businessmen are vocally pressing their cases. Certainly the experience of the Anti-Inflation Board in Canada has heightened everyone's sensitivity to relative position. A similar phenomenon has been noted in the United States: 'It is not just those at the bottom of the heap who are more conscious than ever of what they are missing. Increasingly — perhaps by reaction to the political emphasis on extreme poverty in the 1960s — it is those near the middle who seem most militantly concerned about their share. The double devastation of inflation and recession, moreover, exacerbates the concern with income shares, since everyone, including stockbrokers, feels abused when real income is falling' (Rivlin, 1975).

The effect of housing policy on income distribution will therefore likely continue to be of concern especially since that is the evident intention of many housing programs. Furthermore, much of the impact of the baby boom on the housing market is still to be felt.

In this study a number of major rental and ownership programs and several income tax provisions in effect in Ontario are given detailed scrutiny. Few of the important questions necessary for an assessment of housing policy were answered or even posed during the proliferation of programs over the last twenty-five years. This was especially true of questions about income distribution. What is the value of the subsidy contained in a housing program? Who are the beneficiaries? Does this pattern of benefits meet our standards of equity? Answers to these questions are evidently needed because there seems to be no public consensus at present about the form future policy should take.

This study is part of a growing literature examining the impact of the public sector on income distribution (see Reuber, 1978). Initially such studies encompassed the entire public sector (Gillespie, 1964, 1975; Johnson, 1967; Dodge, 1975) or the entire revenue side (Maslove, 1973). But recent attention has focused on specific expenditure programs or taxes. Like most studies, this report examines the benefits of housing programs by the income class of the recipients. Our concern is with the distribution of household income and whether housing programs are progressive, regressive, or neutral. Of course in other contexts other distributions of benefits would be more appropriate, such as by province or region, by central city and periphery, or by urban and rural area.

In trying to understand the distribution of income in society, increasing importance is being placed on the effects of the change in income of a household over its life-cycle and of the demographic makeup of the population. For this reason, and because housing problems are especially related to the stage in the life-cycle of a household, this study also looks at the benefits of housing programs by the age of the recipient. This is in no sense a complete or satisfying treatment of the issues of life-cycle distribution, but it is a beginning.

Attention is confined to the expenditure side of government housing activities; no attempt is made to consider the impact on income distribution of the financing of housing programs. Such a separation was made possible by the use of a differential incidence framework rather than a balanced budget approach, although occasionally the latter is used in a short discussion of the effects of initiating a housing program.

The data used for the analysis of specific programs were gathered from many sources, a number of them specially compiled for this monograph from the records of the Ontario Ministry of Housing and Central Mortgage and Housing Corporation.

By itself this study does not offer complete grounds for an assessment of housing policy. It would be only one component of that endeavour. A comprehensive view of the issues of income distribution is attempted, but not all programs have been examined in detail. Such questions as the impact of policy on employment, prices, or the spatial layout of cities are not discussed, and many housing-related programs that influence income distribution are likewise excluded, such as small, specific housing programs and others less directly related, such as welfare programs, which implicitly deal with the housing needs of many households, and transportation policies. The emphasis is on federal and provincial programs; most local and regional government activity is excluded. Obviously these other dimensions, as well as other goals of government activity, would have to be part of any comprehensive assessment of housing policy.

A READER'S GUIDE

The study has three parts, the first providing a background, the second an examination of specific housing programs, and the third an overview and conclusions.

The background, contained in chapters 2 and 3, begins by exploring the public's perception of the housing problem. Most public concern can be captured in a declaration: housing costs too much. But that can mean different things to different people. Three criteria of 'too much' are considered. One takes as a standard what prices would be in a competitive market; another compares

housing prices with all incomes; and the third compares prices only with the incomes of prospective homeowners.

Next comes a historical review of the major housing programs, showing how each of the three implicit standards has influenced policy and emphasizing the growing concern with incomes and prices. The second chapter concludes with an analysis of the information available on shelter costs and incomes and the problems of interpreting it. Contrary to widespread belief, people have not become worse off because shelter costs have risen rapidly. However, it has become increasingly difficult for the average household to purchase a first home.

Chapter 3 begins by outlining how economists approach the study of housing issues. The central assumption is that there exists a homogeneous good, 'housing services,' which flows from housing stock. It is this good that is transacted in the housing market. Although the ownership market transacts housing stock and the rental market transacts housing services, for the purposes of analysis there is a single market relating all households' demands for services with all supplies. This section is primarily intended for readers unfamiliar with the microeconomic literature on housing.

The third chapter then presents the methodology used to examine specific housing programs. The differential incidence approach adopted compares the benefits under the existing program with the benefits under an alternative one of equal cost to the government which has a neutral effect on the distribution of household income. We are looking not at the initiation of a program but at the substitution of one program for another. This approach implies certain effects which follow the initiation of a program do not need to be considered: macroeconomic effects, resource reallocations, and relative price changes. These effects can be assumed the same under both programs. Then an analysis of income distribution need consider only households that directly receive government assistance. From a policy point of view it would be preferable to analyse the initiation of a program (including revenue-side changes) or more precisely the effect of a specific initiative being contemplated. Unfortunately such analysis requires a general equilibrium simulation model of the influence of government on household incomes, a model still many years from actuality. Using a hypothetical program as an example the differential incidence approach is shown as it will be used in subsequent chapters.

The third chapter concludes with a discussion of how the benefits of housing programs to participating households are to be measured. They are first measured as the difference between the market value of the housing consumed and the actual payments by a household. This procedure raises problems in a study of income distribution because most households value their participation

at considerably less than this measure, in the sense of the increase in income they would accept to do without the program. This income-equivalent measure, a consumer's surplus concept, is also used. Doing so required a model of the choices facing a household if it participated in a housing program and if it did not. This model, familiar from other studies of public housing, is extended here to deal with ownership programs and income tax provisions.

Most of the material in chapter 3 will be well known to economists working in public finance, who may therefore skim this chapter without facing problems later. However, many housing analysts have not used the economist's framework, and it is for them that a detailed discussion of methodology has been included.

Chapters 4 to 6 examine specific housing programs in detail. Chapter 4 discusses the public housing, entrepreneurial, and non-profit programs, all dealing with rental housing. Chapter 5 looks at the residual lending program, the Home Ownership Made Easy plan, and the Assisted Home Ownership Program, all dealing with owner-occupied housing. Chapter 6 examines the exemption from income taxation for imputed income and the allowable depreciation on rental residential buildings, provisions of the income tax laws dealing with housing.

For each program the details of the legislation are presented, annual expenditure and units completed recorded, the methodology of chapter 3 applied to develop the two measures of benefit, the data used in the computations outlined, and the benefits distributed by income and age. Since the neutral alternative used in the differential incidence analysis is of benefit to the same individuals as those participating in the existing program, the results show the redistribution that would occur within this group if one program were substituted for another.

By this standard all programs proved to be progressive compared to the neutral alternative. However, there are serious problems of vertical equity (the fair treatment of dissimilar people) because only a small percentage of each income class participates in any program, and often the probability of participation rises with income. Obviously, of course, the principle of horizontal equity (the fair treatment of similar people) is violated in this situation as well. The distribution of benefits by age did not show nearly so regular a pattern. Most programs were roughly neutral with respect to the age distribution of income, except public housing and the exemption for imputed income, which showed benefits rising with age compared to a neutral alternative. The ownership programs and the rental depreciation provisions showed the highest participation rates among the young; but a reverse pattern was revealed by the imputed income provision.

Finally, chapter 7 reviews the findings, summarizes the distribution of benefits by income and by age, and discusses the efficiency of the redistribution. Some additional results are presented in brief. The annual value of a marginal change in a program to an average household, which can range from less than $100 for residual lending to over $1300 for the HOME plan, is reported for each program and shown to be progressively distributed. A shelter allowance is used in an alternative differential incidence comparison. In contrast to the results of previous chapters, the programs are shown to be regressive. The chapter concludes with some critical observations on the lack of program evaluation within the housing bureaucracy, on the something-for-everyone approach to solving our housing problems, and on the complexity of and frequent changes in the programs.

2
Problems, policies, and prices

The first two sections of this chapter provide a detailed discussion of how the current housing problem is perceived. The third section offers an overview of housing policy in the postwar period, emphasizing the increasing importance of concern about income distribution in motivating Canadian policy. The fourth section examines available data comparing shelter costs with income.

WHAT IS THE HOUSING PROBLEM?

Since 1945, and increasingly in recent years, people have talked about the 'housing problem.' Almost every election campaign, session of a legislature or local council, or conference on the state and prospects for Canadian society mentions it. The topic even dominated dinner-party conversations during the rapid rise in house prices of 1973 and 1974. Since then the recession and national unity have captured public attention, but the housing problem will undoubtedly return. Many commissions have produced even more reports, and all levels of government have initiated programs for housing.

Housing, it is said, costs too much. The prices of houses for ownership are too high, and so are rents. Sometimes emphasis is placed on different aspects of the high costs: on how prices have changed in the last decade, on the costs of buying a home for young families, or on the fact that low-income households must spend such a high proportion of their income to secure housing that not enough money remains for other necessities. Regardless of the phrase or the identified victims, the problem is seen as the high cost of housing.

Other housing problems do not seem to have the public importance they once had. The problem is not that there is insufficient housing (although an increase in supply would reduce prices). Few observers complain that children are forced to remain in their parents' homes, or that too many families are doubled up, or

people are living in crowded conditions, or that the available new houses are too small. The problem is not that people are living in substandard housing, though for certain groups, notably native people and some single elderly persons in the inner city, substandard housing is a serious problem. In fact the problem of substandard housing may be more widespread than most people realize. In an analysis of the housing stock in Ontario cities in 1974, Treasury Board concluded that 14 per cent of dwelling units were substandard, defined as without any of central heating, piped water, private bath, flush toilet, or electricity (Canada, 1975a). The problem is not that unscrupulous builders are selling shoddy houses; a home warranty scheme has been developed, but there is no widespread public pressure to see it implemented. Finally, the problem is not that we have housing of the wrong type, too many apartments, say, or too few. None of these matters is a cause for general concern. But if the price or rent of all housing were halved, most people would say that the real problem had been alleviated.

True, it is sometimes claimed that rents are too *low* under rent controls, so that new rental units are not being built. But that is because of a policy responding to the fear that rents might become too high.

It is perhaps not surprising that the traditional problems are no longer of major concern. In the last thirty years there has been sustained and significant improvement in these areas, documentation of which is available from many sources (Smith, 1971; Hayek et al., 1975; Ontario, 1974).

THE PROBLEM REVISITED

Beneath the apparently broad consensus about the principal housing problem lurks considerable disagreement. To say housing prices are too high implies a standard of what prices should be. This is the point at which disagreement arises. Three different standards are implicit in popular usage. There are the prices that would occur in a competitive market. Secondly, there are the prices at which everyone can purchase what society deems to be an adequate amount of housing. Thirdly, there are the prices at which designated groups, such as young families, can buy a house. These three usages may be characterized respectively as being concerned with problems of market failure, income, and ownership.

The first usage compares current prices with those that would prevail in a competitive economy.[1] It can be shown in theory that a competitive market

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1 It is useful to distinguish those who say housing prices are too high compared to a competitive system from those who say prices are too high because developers ought to receive less. Many critiques which blame developers for high housing costs are offered in

system will yield an optimal allocation of resources (although such a system will not generally yield the distribution of income society desires). Therefore, it is argued, the prices of a competitive system ought to be the standard (and the problem of income distribution handled separately). Several factors, relating to labour markets, financial markets, land markets, and the housing market, are frequently alleged to make housing prices deviate from the standard. The most commonly cited are non-competitive elements such as construction labour unions, which drive up the price of labour; problems with the operation of the financial markets, which raise the mortgage rate of interest; land speculators, who drive up land costs; and a monopolistic development and building industry, which drives up the price of housing.

A slightly different view compares current prices with those in a competitive economy that has an appropriate level of government intervention. Many housing commentators argue that prices are too high because of excessive government intervention: there is too much red tape, or development standards are too high, or the approval process is too long, or municipalities are opposed to growth. But how does one establish the appropriate program or level of government activity? One is left with a debate about the role of government. The solution in fact is provided by the political process—a lamentable state of affairs for the policy analyst (although for few others).

The second usage, implying that everyone should be able to purchase what society deems to be an adequate amount of housing (and all other goods), can be seen in allegations that the poor either spend too much of their income on housing or cannot afford to purchase adequate housing. Not surprisingly, no one alleges that the price of housing is too high for the rich, because they can afford it. This contradiction draws out an important point: it is not that the prices themselves are too high but rather that they seem too high given a person's income. The combination of prices and income is the problem, not prices alone.

Is the true problem therefore not inadequate incomes? Again, there must be a standard of desirable prices and incomes. If the standard for prices is that which would prevail in a competitive market, clearly much of what is alleged to be a housing problem is in fact a problem of income. Many households face

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this manner (see Gunton, 1978, for a summary of this literature). Those who hold this position are not arguing for the optimal allocation of resources of competitive markets, rather for a distribution of income which they feel to be just. Of course housing prices would be lower if developers received less; indeed housing would be very inexpensive if labour, developers, and landowners all supplied their services at no charge. While it is legitimate to offer arguments in this vein, they should be seen as value judgments about what people ought to be paid.

difficulties not because of the malfunctioning of the housing market but rather because they cannot afford the housing they require. This distinction, apparently an exercise in semantics, will strongly influence any proposed solution.

The third usage suggests that certain deserving groups of households cannot become homeowners with their incomes and current prices. These 'deserving' households are usually low- and middle-income families with children. There seems to be a feeling that even if the housing market were functioning properly these households should be assisted to become homeowners. Some observers even maintain that all households regardless of income should be assisted, because homeownership is beneficial to society as a whole; since these wider social benefits are not taken account of by the individual household deciding whether to purchase a home, there are always too few homeowners from society's point of view.

The three usages reflect three public concerns that have played a part in forming policy. In a sense each concern can be thought of as a rationale for a housing policy. There are of course many other rationales for public action in the housing field, (Aaron, 1972, contains a more complete discussion, and Davies, 1978, examines others in an Ontario context), but these three seem the most important.

HOUSING POLICY IN ONTARIO

It is sometimes alleged that there is not now and never has been a 'housing policy' in Ontario, only a series of improvised, often contradictory, responses to the pressures of the moment. In the sense of a clearly enunciated blueprint actively implemented by the various levels of government acting in concert that is true. However, that is a rather severe definition of policy. Using the simple criterion that 'policy is what government does,' one can discern in the legislation, administration, and expenditures of governments the housing policy in Ontario. No attempt will be made to separate the policies of provincial and federal governments; through shared jurisdiction and cost sharing, their activities are completely intermingled. The programs of local and regional governments will not be dealt with in any detail.

Ontario housing policy in the postwar period can be divided into three eras: 1945 to 1964, 1965 to 1975, and 1976 to the present. Although of course somewhat arbitrary, because programs begun in one period continue into another and legislation enacted in one year may not produce significant results until later, this division does bring some order to the plethora of programs. (Numerous listings of existing housing programs and alternative discussions of Canadian

housing policy up to 1975 are available.[2] Appendix A provides a short description and indicates the size of the principal programs.)

Canadian housing policy until 1964 was dominated by a desire to increase the volume of residential construction, especially of single-family homes. The depression and the second world war had left Canada with a housing stock well short of what was felt to be appropriate for the population. The 1950s, the period of the baby boom, saw increasing numbers of young families with children seeking detached suburban housing. The two major programs of this era were the federal loan insurance program and the federal residual lending program. There was at this time little provincial or local activity of significance. The main lending activities of Central Mortgage and Housing Corporation (CMHC) in Canada from 1954 to 1964 are documented in Table 1. The lending activities in Ontario represented a fairly stable fraction of the Canadian total.

The National Housing Act (NHA) of 1944 permitted the federal government, through its agent, CMHC, to make joint loans with private lending institutions and provide a guarantee to eliminate the private lenders' risk of capital or interest losses. The federal portion of the loan was provided at a reduced interest rate. In 1954 this was replaced by a loan insurance system whereby borrowers paid an insurance premium to the CMHC on loans advanced by authorized private lending institutions. Again the program virtually eliminated the risk to private lenders on these loans, but this time with no public funds involved. The government established the terms of the loan, including the loan-to-value ratio, the maximum permissible loan, the amortization period, the interest rate, and the relationship between gross debt service and income. Control of these terms meant that CMHC had considerable influence on the willingness of institutions to make NHA loans and on the eligibility of households. Private funds under this program greatly exceeded publicly provided funds under any other program, as can be seen from Table 1.

The direct lending program of CMHC, commonly known as the residual lending program, was established to permit the use of public funds for mortgages to finance new residential construction when private sector funds were

2 Ontario (1977a), City of Toronto (1976), and CMHC (1976c) contain descriptions of housing programs currently operating in Ontario. Davies (1978) and Ontario Economic Council (1976) describe the programs and, using simple economic models, analyse the qualitative impact of them. Policy prior to 1964 is discussed in Canada (1962), Canada (1969a), Rose (1969), Dennis and Fish (1972), and Smith (1971; 1974; 1977).
Policy from 1964 to 1976 is discussed in Dennis and Fish (1972), Smith (1971; 1974; 1977), and Rose (1977). With the exception of Smith (1977) and Davies (1978) there is little collected in a single place dealing with recent policy changes, although there have been many comments on specific changes.

TABLE 1

Housing loans by CMHC in Canada 1954-64 ($ millions)

Program	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
Residual lending	–	–	–	198.7	324.4	308.6	150.1	237.9	154.3	281.2	345.8
Federal-provincial housing (public housing)	11.9	12.4	4.0	11.1	10.7	7.6	6.2	6.0	4.2	10.8	8.3
Limited-dividend	16.1	9.9	10.5	30.6	49.2	35.5	11.0	25.5	9.0	14.6	11.3
Student housing	–	–	–	–	–	–	–	9.6	24.2	24.4	39.6
Urban renewal	–	1.8	3.5	1.1	0.0	3.4	4.5	2.9	3.5	3.7	10.3
Sewage treatment	–	–	–	–	–	–	–	39.5	43.4	35.9	26.2
Insured loans by private lenders	378.2	600.7	387.5	261.0	510.0	283.0	231.9	439.4	383.9	364.5	330.6
Home improvement loans by private lenders	n.a.	27.3	29.7	30.6	39.7	37.5	30.1	42.6	38.0	36.7	36.0

SOURCE: See appendix B.

unavailable. To be eligible, borrowers were required to show several rejected applications from private lenders. The terms of the mortgages were controlled by CMHC and were generally more favourable than private loans and at slightly lower interest rates. The program was scarcely used until the late 1950s, but thereafter it dispensed vast amounts of money to finance mainly single detached housing (Table 1). The program was often used to create employment and to stabilize the residential construction industry, as well as to increase the stock of housing. From 1957 to 1968, 16 per cent of all new dwelling units were financed under this program (Smith, 1971, 78).

In our terminology each of these programs was a response to market failure: prices were or would have been too high because of market failure. The private institutions would not supply adequate amounts of mortgage financing on sufficiently liberal terms because they overestimated the risk of default. To correct this refusal a government insurance scheme was adopted. There was no intended direct or indirect subsidy under the scheme, because the premiums covered all losses and administrative costs. This was simply a government activity to promote an efficient market. Since that time the private market has begun to provide mortgage insurance. Similarly, the direct lending program was rationalized as redressing the market's failure to provide credit, for example in smaller towns or in periods of recession. Again there was no intended subsidy under the program, although the attractive loan terms were a form of assistance (see chapter 5). Clearly, however, the lending went much beyond that needed to redress market failure; it provided direct, though small, assistance to purchasers of new, single detached housing.

Two other moderately sized programs existed in this era designed to redress market failure and improve the functioning of the market. CMHC established a system of insuring loans made by private institutions for home improvements because it was felt the institutions improperly assessed the risks involved. After 1961 a package of loans and grants was available to municipalities for the construction of sewage treatment facilities because it was felt that municipalities did not have sufficient revenue sources or access to capital markets to carry out their expenditure responsibility.

The philosophy of the day was 'to assist the private sector' (a less pejorative phrase than 'to redress market failure'). CMHC was a benevolent banker making sure that houses got built. There was some concern with the housing problems of low-income households, but it was assumed that the most appropriate government response was to rely on filtering: when new units were built for middle-income households, old residences would filter down and be occupied by those with lower incomes.

The programs offering direct assistance to low-income families: federal-provincial housing (public housing) and entrepreneurial (or limited-dividend) housing remained relatively modest throughout the era (Table 1). Under the federal-provincial program the two levels of government were partners in building and operating housing which would be rented to selected low-income households. Rents were established according to ability-to-pay rather than to amortize the costs of the project, so that operating subsidies were required. The federal government contributed 75 per cent of the operating subsidy and the capital cost, while the province contributed 25 per cent and could pass on a share of this to the involved municipality. In most instances local initiative and support were required to establish a federal-provincial housing project. The limited-dividend program made loans available to private entrepreneurs to build housing which would rent at below-market rates. Rentals could only be changed with the approval of CMHC and were set to guarantee a fixed, limited return to the owner. These rental units were intended for low- and moderate-income households, although rents did not change with income of the tenant. The operators of the dwellings were required to check tenant incomes annually, and an income ceiling for eligible tenants was established by CMHC. There was, however, little control of who occupied the units, and income ceilings were often lifted (Dennis and Fish, 1972, 239). A common practice was to combine either of these programs with an urban renewal scheme in which the federal government assisted in the aquisition and clearance of a site occupied by 'slum housing.'

The configuration of activities in this era was determined by the dominant philosophical concern of government, which was to improve the operation of the private market. There was considerable hostility to the principle of direct subsidy and to the idea of active government involvement in the housing market. It was even suggested that public housing be deliberately designed to be undesirable in order that it not compete with private housing (ibid., 175). Interestingly, in the early 1960s a major program was begun offering attractive loans for the construction of student housing; somehow subsidizing students from middle-class families was more acceptable than subsidizing low-income households.

In the early 1960s the approach of government began to change, not so much out of dissatisfaction with the previous system — the insurance program remained and extensive residual lending continued until 1972 — but because it was felt that more could be achieved. Attention shifted from market failure to income issues, and governments became much more directly involved in the housing market. The extensive amendments to the National Housing Act in 1964

mark the beginning of this new phase. The principal programs are documented in Table 2, showing CMHC lending in all of Canada, and Table 3, showing CMHC lending in Ontario. Ontario's housing expenditures cannot be separated by program. Data show the aggregate expenditure to have increased dramatically from $2.5 million in 1964-5 to $168 million in 1973-4 (Foot, 1977).

The change of greatest moment was the emphasis given to public housing. The 1964 amendments offered an alternative to the partnership cost-sharing arrangements: the federal government would provide 90 per cent of the capital cost and share 50 per cent of the operating subsidies for provincially or locally owned and operated public housing. In large part to facilitate use of these arrangements, the Ontario Housing Corporation (OHC) was established in 1964, and a number of other provinces followed suit in subsequent years. By 1967 $120 million in loans for public housing were advanced in Canada, almost fifteen times the amount just three years previously. By 1971 the amount had more than doubled again to $300 million, and almost 10 per cent of all housing starts in Canada were financed under the program. These loans have declined somewhat since but remain about $250 million annually (Table 2). The necessary annual operating subsidies have risen steadily, much to the consternation of all governments, and now stand at over $210 million in Canada. By any criterion this program represents a massive commitment of resources and a momentous change in Canadian housing policy.

A concern with adequate housing for lower-income households or, as Humphrey Carver gently phrased it, a desire 'to spread the benefits of an affluent society' (Carver, 1975, 164), emerged in this period. Housing was classed with education and health care as something to which everyone was entitled as a right. In the early 1970s the minister of state for urban affairs stated that the federal government has 'adopted the basic principle that [says] it is a fundamental right of Canadians, regardless of their economic circumstances, to enjoy adequate shelter at reasonable cost' (Canada, 1973a, 186). The Ontario Ministry of Housing declared that 'adequate housing at affordable prices is a basic right of all residents of Ontario' (Ontario, 1974, 1).

Concern had shifted from the malfunctioning of the market to ensuring adequate housing for all. The combination of a household's low income and high housing prices often meant that inadequate housing was obtained or too high a fraction of income had to be devoted to securing adequate housing. Although the nominal concern was with housing, the essence of social disquiet was broader; inadequate housing was simply the most poignant manifestation of an inequitable distribution of the output of our society. The problem was income, not housing. There was remarkable agreement in this matter. A passage of the

TABLE 2

Housing loans by CMHC in Canada 1965-75 ($ millions)

Program	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Residual lending	404.7	446.3	507.2	336.7	161.4	359.7	204.3	110.0	38.2	39.3	14.7
Assisted home ownership program	–	–	–	–	–	–	–	–	133.1	430.2	462.1
Public housing	40.7	66.7	119.5	115.3	212.5	245.6	299.7	248.1	229.0	250.3	278.7
Entrepreneurial housing	0.6	0.0	0.0	23.0	89.5	243.4	143.6	115.2	70.1	50.4	253.8
Student housing	32.4	29.1	73.8	60.1	67.8	35.7	23.4	15.4	0.0	4.4	0.3
Non-profit and co-operative housing	13.7	20.9	30.6	57.7	90.7	72.8	70.4	40.4	42.8	160.1	181.0
Urban renewal	3.2	13.3	48.3	24.7	18.0	n.a.	28.5	22.1	–	–	–
Sewage treatment	27.3	35.7	26.6	37.6	50.4	72.5	76.7	97.2	159.9	217.8	181.0
Insured loans by private lenders	308.6	134.6	341.0	798.8	660.5	894.6	1807.2	2040.3	1813.6	1142.0	3439.7
Home improvement loans by private lenders	35.6	35.9	35.2	23.9	22.1	16.9	19.0	19.0	16.2	18.6	15.8

SOURCE: See appendix B.

TABLE 3

Housing loans by CMHC in Ontario 1965-75 ($ millions)

Program	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Residual lending	100.4	133.8	158.2	65.3	35.8	78.6	23.2	7.2	4.6	6.1	1.7
Assisted home ownership program	–	–	–	–	–	–	–	–	13.8	136.4	127.8
Public housing	37.4	64.4	95.3	87.5	130.5	128.4	152.7	113.7	105.3	82.8	105.4
Entrepreneurial housing	n.a.	n.a.	0.0	5.1	14.8	125.2	49.6	44.1	37.4	20.2	96.4
Student housing	16.1	24.1	35.5	42.9	31.7	12.6	13.0	6.2	2.2	0.8	0.0
Non-profit and co-operative housing	n.a.	n.a.	8.1	5.4	5.1	3.8	5.4	6.7	2.9	63.5	53.9
Urban renewal	1.6	2.6	14.9	14.7	3.6	n.a.	4.3	5.4	–	–	–
Sewage treatment	11.1	17.5	19.8	21.8	20.3	23.1	24.7	51.9	87.7	86.6	61.4
Home improvement loans by private lenders	9.3	10.3	n.a.	n.a.	7.1	5.1	6.1	5.9	4.6	5.4	3.7

SOURCE: See appendix B.

Real Poverty Report, 'the problem is probably not that there are not enough decent homes to go around; the problem is that the poor do not have enough money either to rent or buy them' (Adams et al., 1971) was utilized by Michael Walker of the Fraser Institute (Hayek et al., 1975) to support his argument.[3]

CMHC, as an agency dealing with housing, sought to improve the housing of low-income households, but its efforts were part of a broader desire to redistribute income. It is pointless, of course, to claim that the intent was *solely* to increase incomes and housing was chosen by chance as the vehicle for redistribution; both are important. Those who contribute to a subsidy likely care not only about raising the incomes but also about how it is spent; while the recipients of the subsidy presumably would probably prefer an increase in income with no controls on how it should be spent. If the household had sufficient income and inadequate housing there would still be a problem; likewise, if the household had sufficient housing but was destitute, a problem would remain. Income is valued for the things it can buy. The two are inextricably linked. Nevertheless the desire to redistribute income was the basic motivation of this era.

The other program for low-income households, entrepreneurial or limited-dividend housing, was utilized somewhat differently during this time. In the mid-sixties it was almost unused because of a growing belief that private entrepreneurs were not suitable as operators of social housing. From 1969 to 1973 the program was extensively used again, although its aim was more to increase the stock of rental housing. Rents were still controlled to limit the rate of return, but the hope was to provide accommodation which rented at $20 below market rates, so that moderate-income rather than lower-income households became the main tenants.

It was hoped that a replacement for private entrepreneurs as operators of social housing for lower-income households outside public housing would be non-profit groups: the so-called third sector (after government and the private sector). The 1964 amendments provided a special subsection dealing with non-profit groups which had previously used the limited-dividend provisions. The assistance was in the form of loans on generous terms but with no subsidy for operating losses. The YMCA, church groups, service clubs, and similar organizations have used the program to build housing for the elderly and hostels

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3 The Fraser Institute 'has as its objective the redirection of public attention to the role of competitive markets in providing for the well-being of Canadians' (Hayek et al., 1975). The *Real Poverty Report* was prepared by persons critical of a study of poverty conducted by the Senate of the Government of Canada.

for single men and women, but very little has been provided for families. Growth has been slow but steady, until in 1976 almost $200 million was advanced. In 1973 co-operatives became eligible for special assistance, and despite lukewarm support from the CMHC bureaucracy they have added a further significant element in the third sector which will likely continue to grow.

During this period the various programs intended to remedy market failures continued in much the same form as before. The mortgage insurance program remained in effect, although the interest rate formerly set by CMHC was freed to be established by market forces. The scheme was used not only to increase the housing stock but also by varying the loan terms to stabilize the building cycle and economic activity in general. The residual lending program was used for similar purposes. It was extensively used until 1973, when new initiatives to assist home owners were implemented. The insured home improvement loans were still available, although they were not given much priority and their usage declined steadily. The sewage treatment loans and grants were taken up more and more by municipalities, until in 1974 over $270 million in loans and almost $20 million in direct subsidies were dispensed. Ontario also instituted a bundle of measures dubbed the Housing Action Program which was largely intended to redress market failure.

Together these programs constituted the main elements of housing policy during the sixties. On the surface it represented a coherent and consistent package. A neat taxonomy was frequently used to summarize the policy of the time: households in the upper third of the income distribution received no direct assistance, operating wholly in the private market; households in the middle third received a little aid through the market failure programs (the insurance program and residual lending which built housing to match their demands); households in the lower third received direct assistance under the programs to redistribute income — those with higher incomes under limited-dividend and non-profit, and those with the lowest incomes under the public housing program. The middle third were intended to be homeowners, while the lower third were to be renters because they could not afford to purchase a home even with assistance. One can almost see the organization chart on the wall of the central office of a policy planning group: household income across the top, each program in its place below.

In the late sixties and into the mid-seventies the organization chart was altered significantly in response to a number of pressures. Public housing was the subject of intense and continued criticism. Its high-rise complexes were called ghettos for the poor; the sites were often far from services, employment, and recreation areas; the concentration of persons meant the households could not escape the stigma placed on those who receive direct subsidies. A number of alternative

programs[4] were developed based on a rent supplement approach, but they have remained small. In these programs the subsidized units are no longer concentrated but spread out — no more than 25 per cent of the units in a building may be used — often in privately owned and operated buildings. The criticisms and the troubles which often accompanied public housing in a neighbourhood meant increased municipal reluctance to initiate public housing projects. By 1976, although public housing was still being built, it was almost all for the elderly, a less problematic clientèle than families. In Ontario in 1973, 65 per cent of the units had been for families, while in 1976 the proportion fell to only 7 per cent (Rose, 1977).

An even more significant change in the organization chart was the growth of programs intended to provide assistance to the middle third of the income distribution. The existing programs to redress market failure were no longer deemed an adequate response to their needs. Housing was beginning to 'cost too much' even for the middle-income household both in the sense that their incomes did not permit them to buy enough housing at given prices and in the sense that they were unable to purchase a house. The concern with income problems begun in the early sixties was extended to include middle-income households. Indeed, bizarre as it may sound, the income problems of the middle class became more important than those of the poor. A closely related concern was with ownership problems: middle-income households had been able to purchase housing previously but seemed less and less able to do so, especially young households. For the first time ownership problems received a high priority, and considerable assistance was offered to enable the purchase of a home; in many cases the assistance was larger than that provided to public housing households. The ownership problems of low-income households were not of concern because they had never been able to purchase housing. The welfare state had now reached the middle class.

It is intriguing to speculate why this evolution occurred, but because it is much beyond the scope of this report the temptation must be resisted.

The new redistributive programs directed towards middle-income households dealt both with rental and ownership housing. The entrepreneurial program, previously intended to accommodate low-income households, became a scheme to stimulate construction of rental units which would rent slightly below market rates. In 1975 the program committed over $250 million in loans and was

4 The Rent Supplement Program, the Community Integrated Housing Program, and the Accelerated Family Rental Housing Program were started in Ontario. See Ontario Economic Council (1976) and Ontario (1975a) for a discussion of them. These programs are now dormant, except the Rent Supplement Program.

augmented by the Assisted Rental Program (ARP), which provided subsidies to private developers who would build units to rent at current market rates though development costs required somewhat higher rents. For the first time cash subsidies were offered for private rental construction with no constraints on the income of the tenants. The final program of the period was rent control, which redistributed income to renters regardless of income, but its implementation was no doubt caused by the complaints of middle-income renters.

The growth of programs for the middle third was even more dramatic in the ownership area. During the late sixties and throughout the seventies there has been a widespread perception that housing costs were rising faster than incomes. The following section explores in some detail the movements in prices and incomes, and although certain aspects of public perception were mistaken it is clear that house prices rose more rapidly than incomes for some of that time.

The Ontario government was the first to offer ownership assistance, through its Home Ownership Made Easy (HOME) plan, begun in 1967. At the outset HOME offered lots, which the province had assembled and serviced, for sale with the choice of a number of purchase arrangements. The most popular arrangement was a fifty-year lease with payments based on the government book value of the land rather than the market value (the book value included acquisition, development, and servicing costs). Homes built on the land were privately financed, so the eligibility rules for these funds determined participation in the program. In 1973 public funds at less than market rates were made available to finance the homes. The effect of the program was to reduce down payments and carrying costs through special treatment of land costs and attractive mortgage rates. Although the out-of-pocket costs to government were small, the implicit subsidy of the program was quite large. Between 1967 and 1975, more than 20,000 lots were handled under this program, most in the later part of the period.

Such was Ontario's concern for the homebuyer that for a time it offered cash grants of $1500 regardless of income to households buying their first home. The principal recipients of these grants of course were middle- and upper-income households.

The federal government reacted to the rise of house prices in a similar manner, although somewhat later (Table 2 and 3). In 1973 a major new program, the Assisted Home Ownership Program (AHOP), was instituted to assist, moderate-income families with children in the purchase of their first home. CMHC offered high-ratio first mortgages and cash supplements depending on a family's income for the purchase of any new house, up to a maximum value established for each city. In early 1975 the program was broadened to permit supplements to families who secured mortgages from private lenders. In that same year grants of

$500 were offered to purchasers of new moderately priced houses buying their first home.

The approach had shifted significantly from that of the early part of the 1965-75 decade. The central concern was still the redistribution of income, but interest was extended to include the problems faced by moderate-income families, especially in purchasing their first house. Even CMHC acknowledged the change; in its annual publication, *Canadian Housing Statistics*, the titles of tables describing the explicitly redistributive programs were changed from 'Aids to Low Income Groups' to 'Housing Assistance Programs.' At the same time the aggregate level of government housing expenditure and the degree of intervention in the housing market had expanded, a trend well documented by Smith (1977). From 1946 to 1969, 38 per cent of all housing starts were financed under the National Housing Act, while from 1970 to 1975 this proportion rose to 46 per cent; even more significantly, the starts financed under the clearly redistributive programs had risen from 4 per cent to 16 per cent (Smith, 1977, 6).

The second era of Canadian housing policy, therefore, continued the early post-war programs designed to assist the operation of the private market and expanded the purview to include the issues of income distribution and homeownership. Attention, at first concentrated on the problems of low-income households, then shifted to those of middle-income families. The shift occurred even though the problems of low-income households had not been solved and many eligible households did not receive assistance. Rather than dealing first with those in greatest need, a something-for-everyone approach was followed.

By the mid-1970s massive subsidies were being offered to middle-income households with seemingly little attempt to measure the equity of the entire housing policy. A bewildering array of new programs was mounted with changes announced almost weekly. Old programs were modified, or allowed to continue, but seldom abandoned as new programs emerged. In early 1975 it was impossible to obtain even a list of existing programs. How are our resources being allocated? Who are the beneficiaries of these expenditures? What is the value of these subsidies? Does the distribution of these benefits meet our standards of fairness? These questions were rarely asked and never adequately answered.

Since 1975 housing policy has changed yet again, principally in response to pressures for restraint in public spending and in government activity generally. For several years housing programs were altered with great frequency until in May 1978 the federal government announced a series of proposals entitled 'New directions in housing' (CMHC, 1978b). These proposals ostensibly are to provide the framework for housing policy over the next several years. Because they are still the subject of federal-provincial negotiations the proposals cannot yet be

described in detail. But the broad pattern of future housing policy seemed clear at the end of 1978.

In the rental area, the limited-dividend program is almost unused. ARP is only used to offer a form of graduated-payment mortgage which it is hoped will soon be available from private lenders. Rent controls and rent supplement assistance continue. Public housing continues in its present form but eventually will be replaced by a scheme for assisting provincial and municipal non-profit housing corporations. Non-profit co-operatives and private non-profit corporations will receive assistance under the new terms. Under the proposed program, CMHC will offer a unilateral contribution equivalent to a reduction of the interest rate to 2 per cent on a mortgage covering the entire value of a project.[5] Non-profit corporations will have to obtain private funds to finance new construction, although public funds will be available from CMHC for renovation of existing buildings. Tenants will be charged a rent of 25 per cent of their income up to a maximum equal to the market rent for equivalent accommodation in the community. It is believed that even this market rent is below the level necessary to provide the accommodation using private financing (because of rent control and because the housing market is not in equilibrium), so that even tenants charged the maximum rent are receiving assistance. The unilateral federal contribution implies that about 15 to 20 per cent of the tenants in a family housing building could be charged a rent geared to their income. If a higher percentage is desired, provincial assistance will be required. As of January 1979 Ontario had not made any commitment to provide additional assistance.

These changes in rental programs continue past trends towards mixing tenants with different income levels and providing assistance to households of both low and moderate income. However, the future of these programs is uncertain, especially regarding how many units will be built and whether they will be suitable for families. It is very unclear whether any level of government is committed to actively using the programs: the federal government is suggesting that the locus of responsibility lies with the provinces; recent announcements by Ontario (1977b) imply that initiatives for any assisted housing projects must increasingly come from the local level; and with few exceptions municipalities have displayed neither interest nor capability in providing assisted housing.

The changes in ownership programs since 1975 have been even more significant: almost no assistance is available. The HOME plan has been discontinued. The residual lending program is not directing resources into the

5 This is the maximum contribution. If the difference between the revenues necessary to finance the building without assistance and actual revenues is less than the maximum contribution, the lesser amount will be the level of federal contribution.

production of housing. AHOP no longer offers cash supplements, only payment reduction loans, which have the effect of converting a regular into a graduated-payment mortgage. This new AHOP is a transitional program until graduated-payment mortgages are available from private lenders. The new government approach to ownership is an attempt not so much to redistribute income as to alleviate the usual problem of mortgages in times of inflation: nominal payments remain constant over the term of the mortgage, so that real payments are highest in the initial years (see Davies, 1978, for a discussion). Emphasis has moved from redistribution to market failure, a return to the concern of the 1950s.

The changes since 1975 show that views of housing policy are in flux. A coherent strategy to be followed over the next decade has not yet emerged, and for this reason the question of the impact of past housing programs on income distribution is particularly germane. The experience of homeownership assistance programs, begun in the 1970s and curtailed recently, will be especially important as the children of the baby boom form families and enter the housing market over the coming years.

Any short summary of the housing policy of a nation is bound to omit a great deal. Numerous smaller programs, often with clear redistributive intent, such as those offering assistance to native people, have been omitted. The activities of local and regional governments, especially the planning and the regulation that so greatly influence housing markets, have had to be ignored. Many other actions of all levels of government excluded from this study, although nominally not concerned with housing issues, have an important impact; immigration regulations, transportation investments, and the welfare system are examples. Perhaps the most important indirect effect of government on housing issues comes through the income tax system, which contains many special housing provisions, including the exemption for imputed income and the generous depreciation allowed on rental buildings, both of which are examined in detail in chapter 6.

INCOMES AND SHELTER PRICES

The relationship between incomes and shelter prices (both for rental and for ownership) has been a recurrent theme in the definition of the housing problem and the history of Canadian housing policy.[6] Previous examinations of this relationship (Smith, 1971; Muller, 1978) have been fairly general. This section attempts to answer a number of more detailed questions: have the prices for

6 This relationship has recently attracted concern in the United States and been subject to scrutiny (see Frieden et al., 1977; Frieden, 1977).

shelter risen faster than incomes; are households worse off because of these changes; and has it become more difficult for the average family to enter the ownership housing market? Inevitably none of the different data series corresponds precisely to what one wishes to measure. Nevertheless, some conclusions seem possible.

The most commonly heard allegation has been that housing costs, either for ownership or for rental, have been rising faster than incomes. The most useful measure of income is probably household disposable income (income after taxes including transfer income), which is the income available to the spending unit that acquires housing. Household disposable income could not be obtained on a consistent basis, so an acceptable alternative, personal disposable income (PDI) per capita, was used. An index of this measure (1961 = 100) is presented in the tables when comparisons are made between rental or ownership prices and income.

Consider first the comparison of rents to income. What one seeks is an index of the change in market rent of identical (quality held constant) rental housing units. Unfortunately no such index exists. The only available index dealing with a long period of time and making some attempt to adjust for quality changes is the rent component of the consumer price index (CPI) (Table 4, column 1). It has often been claimed that this index is subject to some downward bias; Hayek et al. (1975, 14) suggest a downward bias due to 'the sampling technique used by Statistics Canada' but give no further details. If a comparison is made between the CPI rent component and an index of actual rents paid, obtained from the Labour Force Survey, (column 2), there is enormous divergence. The latter increases at twice the rate of the former (Loyns, 1972). Actual rents paid, of course, are not a proper measure of price change, because improvements may be made in the quality of accommodation. Nevertheless, the divergence between the two series seems larger than the likely quality improvement and suggests a downward bias in the CPI rent component. The actual rents paid by households in the Labour Force Survey, which is used in computing the CPI rent component, are no longer available from Statistics Canada. The list has been declared confidential. This is a most distressing and alarming development because it means that the only series that provides a rough check against the CPI rent series is now denied to independent researchers. The index of actual rents paid, available to 1970 in Loyns (1972), was extended here assuming that its relationship with the CPI rent series remained the same.

Muller (1978, 21) suggests that the bias in the CPI rent series may be due to the fact that the housing units used to compute it remain in the sample only for six months; 'consequently if for some reason not all of the rent increases during the six month sample period are reported and accordingly the index rises too

TABLE 4

Rental costs and income 1961-76

	CPI rent component (1)	Average actual rents paid (estimated) (2)	Revised CPI rent component (3)	Revised CPI for renters (4)	PDI per capita (5)
1961	100	100	100	100	100
2	100.3	101	99	100.6	105.6
3	100.6	104	100	102.2	110.6
4	101.2	107	101	103.7	115.0
1965	101.9	112	104	106.2	122.6
6	103.6	118	108	110.3	132.5
7	107.1	125	114	114.4	140.3
8	111.8	133	119	118.6	150.1
9	116.3	142	123	123.3	161.5
1970	120.3	154	130	127.2	169.0
1	122.5	163	135	130.5	185.4
2	124.3	170	138	135.7	207.2
3	126.4	179	142	144.7	234.1
4	130.1	190	148	158.8	266.2
1975	137.2	205	157	176.6	301.5
6	147.0	223	168	188.2	351.3

NOTE: Columns (1) to (4) deal with Canada, column (5) with Ontario.
SOURCE: See appendix C.

slowly, there is no self-correction mechanism which will eliminate the error.' The point is valid, but the question is why rent increases are not properly reported. Presumably this method of calculation can lead to upward bias if excessive rent increases are reported. Loyns (1972, 63) argues that the downward bias is due to a 'new unit' problem, which can arise, given the method of splicing out rent changes resulting from the rotation of housing units in the sample, if non-competitive pricing exists in the rental market. If landlords price their rents to cover construction costs and construction costs are rising, two identical units built at different times will have different rents. 'When the later built units are sampled and spliced into the index and the entire price change is attributable to a quality improvement (as in the case for the CPI), the true price increase is understated' (ibid.).

An approximation of the true rent increase, suggested by Loyns, is to deflate the index of actual rents from the Labour Force Survey by 2 per cent a year to adjust for quality improvement. This revised rent index, always greater than the

CPI rent component, is presented in column (3) of Table 4 and will be used in the rent income comparisons.

After adjusting the CPI rent component (or even using actual rents) it is clear that rents have not risen nearly so rapidly as incomes since 1961, and in only one year (1969-70) did rents ever rise more rapidly. The clamour over rising rents simply cannot be substantiated by the data. No doubt there were many cases of large rent increases in a single year, but these increases likely reflected a one-period adjustment, and over a longer period the rate of increase was not great. No doubt there were instances where rents rose faster than the incomes of individual tenants, especially elderly tenants on fixed incomes, but over-all the increase in incomes far outstripped the increase in rents.

Of course a comparison between rents and incomes does not provide grounds for concluding that renters have become better or worse off. Such a conclusion requires comparison of incomes and *all* prices faced by renters. The general price level has risen faster than rents, but revising the CPI (column 4) to remove ownership costs and include the revised measure of rent increases (appendix C) yields the same conclusion: incomes have risen far faster than the prices faced by renters. A typical renter has become much better off since 1961 and continues to do so, especially under rent control.

Measuring the price of homeownership is more problematic than measuring rents. It is worthwhile considering the complexities because comparisons of ownership costs and incomes are so frequently made. In examining the change in the costs of owning a home, unfortunately, there is no obvious price paid every year by most households because a home is bought in one year and used for many years thereafter. Furthermore, other costs must be met when owning a home, such as property taxes, repair and maintenance costs, and insurance costs, and changes in these should be included in an index of homeownership costs. It is normal to exclude the costs of operating a home, such as the cost of appliances, furniture, fuel, and electricity, because they would have to be paid by either owner or renter. They are treated as a separate item in the consumer price index.

The standard method of combining the changes in the prices of several items into a single price measure is to calculate a Laspeyres price index. This index 'measures the percentage change through time in the cost of purchasing a constant 'basket' of goods and services representing the purchases made by a particular population group in a specified time period. The 'basket' is an unchanging or equivalent quantity and quality of goods and services' (Canada, 1973b, 6). The consumer price index is of this kind. A homeownership index would consider only the basket of items which are part of owning a house. The calculation of this index requires specification of weights representing an item's

relative importance in the basket and a series of price indices to apply against each of these weights (ibid., 12). The index for any time period n may be computed as follows:

$$I_n = \Sigma \left[\frac{p_n}{p_0} \cdot 100 \right] \left[\frac{p_0 q_0}{\Sigma p_0 q_0} \cdot 100 \right] / 100, \tag{1}$$

where I is the index, p is the price of an item, q is the quantity of an item, 0 is the base period from which the index is calculated, and the summation is over all items in the index. The weights are determined from the expenditures of a given population group in the base period.

There are two approaches to developing a Laspeyres homeownership index, and they yield considerably different pictures of the change in prices. In one the emphasis is on the annual cost of *consuming* housing through ownership; in the other the emphasis is on the annual cost of *acquiring* housing through ownership. The homeownership basket of both approaches is made up of five items: housing services, mortgage interest, repairs and maintenance, property taxes, and insurance. In the consumption approach the weights for these five items are computed using the actual expenditures of the specified population on the latter four items and the value of housing consumed, which is assumed to be the value of the annual depreciation of the housing stock lived in by the specified group. The annual depreciation is calculated as the net housing purchased by the group (all houses purchased less houses sold) minus a factor for land purchase and capital accumulation. The consumption approach does not include expenditures for land or capital accumulation in calculating the weights because they are reversible and therefore not part of consumption. The acquisition approach calculates expenditure on housing services somewhat differently. When computing the weights it uses the expenditures to acquire housing by the specified group including expenditures by first-time buyers and net expenditures by those buying replacement houses. Since capital appreciation and land represent expenditure in acquisition, the acquisition approach would have a larger weight for housing services than the consumption approach (Loyns, 1972, 37). The CPI in Canada uses a consumption approach.

In the consumption approach the price index applied to the housing services weight, measuring the changes in the replacement cost of the depreciation, is composed of a weighted average of indices of materials prices and labour costs. The problems of using these price indices as a measure of changes in replacement cost are well recognized. The failure to account for changes in productivity, input substitution, and profit rates (Loyns, 1972) results in an overstatement of the price increase. Furthermore, the consumption approach excludes any

consideration of the price of land, which has been rising more rapidly than other input prices. In contrast, the price index applied to the housing weight in the acquisition approach would include labour, materials, and land prices.

The price index applied to the mortgage interest weight in the consumption approach is designed to measure the interest rates actually faced by households and therefore is an average of the mortgage rates on existing and new mortgages. The index is extremely insensitive to changes in mortgage interest rates because only 2 per cent of the mortgages used in the averaging are at current rates. The index is modified to take account of increases in the cost of building houses under the assumption that the 'standard' amount of mortgage debt would be increasing. The acquisition approach would use only current mortgage interest rates in computing the price index.

The repairs and maintenance price index, composed of materials and labour price indices, is subject to the problems noted earlier. The property tax index is computed from mill rate changes. The insurance index is computed from changes in insurance rates modified to recognize increases in the cost of building homes, again under the assumption that the 'standard' amount of insurance would be increasing. Both consumption and acquisition approaches are the same for these three items.

The combination of these weights and prices using a consumption approach forms the homeownership component of the CPI (Table 5, column 1). A comparison of this measure and income reveals that increases in income have been far greater than increases in housing prices since 1961, and only for a few years in the later 1960s did housing prices rise more rapidly. Adjustments to correct the problems with the CPI component noted earlier would not change this conclusion. The major problem, the use of materials and labour price indices, has tended to overstate the true price increase. These conclusions clearly contradict the widely held public view that incomes have been outstripped by the rise in costs of ownership.

The contradiction is even sharper if account is taken of the capital gains enjoyed by homeowners as part of their consumption of housing services. McFadyen and Hobart (1978) recalculated the homeownership component of the CPI to include capital gains,[7] and their index was only 114.6 in 1976

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7 McFadyen and Hobart (1978) also changed the weight assigned the mortgage interest component. For convenience they used a price index of current mortgage rates rather than a weighted average of past and current rates, a procedure that accelerates the increase in housing costs in times of rising interest rates. Comparing this index with income reflects the situation of a household which had owned a home throughout the period.

TABLE 5

Homeownership costs and income 1961-76

	CPI home-owner-ship compo-nent (1)	Revised home-owner-ship compo-nent (2)	Average cost of NHA homes (3)	Average MLS sales price (4)	Revised CPI for owners (5)	PDI per capita (6)
1961	100	100	100	100	100	100
2	102.8	102.7	102.3	102.7	101.3	105.6
3	105.9	103.6	105.3	102.7	102.8	110.6
4	110.4	108.2	110.7	107.7	104.9	115.0
1965	115.0	115.1	116.9	116.1	108.2	122.6
6	120.1	130.6	129.6	132.3	114.3	132.5
7	126.9	144.6	131.7	146.9	119.9	140.3
8	136.1	166.2	133.7	164.0	127.0	150.1
9	148.3	185.8	146.8	178.0	134.5	161.5
1970	161.3	195.0	143.4	178.0	138.9	169.0
1	174.3	197.2	148.4	188.1	141.6	185.4
2	188.3	208.9	157.1	201.8	148.2	207.2
3	207.0	252.3	171.4	254.3	164.4	234.1
4	227.1	328.2	200.2	322.6	191.0	266.2
1975	250.3	351.0	238.3	339.7	211.3	301.5
6	284.8	389.1	267.9	365.7	227.8	351.3

NOTE: Columns (1), (2), (3), and (5) relate to Canada, columns (4) and (6) to Ontario.
SOURCE: See appendix C.

(1961 = 100), compared to an income index of 351.3. Obviously if either the homeownership component or the McFadyen and Hobart index were used to create a homeowner's CPI, the increase in the prices of all items would be much below the increase in incomes. Homeowners have become better off and continue to become better off.

The contradiction between public perception and the data is due in part to underestimating income increases and exaggerating price increases and in part to the fact that the public's notion of the cost of homeownership often does not correspond to the consumption concept used in computing these indices. The public's notion may be closer to the acquisition approach, which measures the cost of acquiring a bundle of goods in each year assuming the household did not own a home before. A revised homeownership component using this approach was computed (for details see appendix C) and is presented in Table 5 column (2). This index reveals that homeownership costs have indeed risen faster than

incomes; the disparity in their growth rates was especially sharp in 1973-4 when prices rose 30 per cent and incomes rose 14 per cent. These data support the public perception of exploding housing costs.

Unfortunately this comparison has been used to draw erroneous conclusions. The rise in housing prices is unlike any other price increase. A large percentage of the population is insulated from the price rises because they already own a home (indeed they profit from the price hike should they ever wish to buy a smaller quantity of housing); others only face a part of the increase and then purchase a house; still other households are unaffected because they never wish to buy a home. This is unlike other sorts of commodities. Everyone faces an increase in the price of milk or vegetables or gasoline. Housing, because of its durability, presents particular problems in attempting to judge how a person's wellbeing is influenced by price changes. The consumption approach measures the situation of existing homeowners, who clearly have not been hurt. The acquisition approach measures the situation only of those households about to buy a house, a very small group; it does not apply to most homeowners.

These comparisons have also been misused in other ways. It has been alleged that if housing prices rise faster than incomes this is evidence of a failure of the housing market, or of supply constraints, or of exploding costs of supply. Not one of these conclusions is warranted. A normally functioning competitive market will show prices rising faster than incomes if the income elasticity of demand exceeds the difference between the price elasticities of supply and demand (see appendix D). A growing city, with constant incomes, will show rising housing prices simply as a result of urban growth (DeSalvo, 1977).

A more frequent and especially unwarranted conclusion is that when house prices are rising more rapidly than incomes people are getting worse off. This is the wrong comparison to make. Such a conclusion requires the comparison of income and *all* prices. Suppose one's income rose by 15 per cent, housing costs by 18 per cent, and all other prices by 8 per cent. Chances are that one would be better off. If money income has risen by a greater percentage than the consumer price index one may conclude that the household is better off. Unfortunately if incomes have risen by a smaller percentage one cannot conclude that the household is worse off. Only if the percentage is smaller than the rise in a Paasche price index can such a conclusion be drawn (for a good discussion of this issue see Hirshleifer, 1976).

The proper comparison, that between income and all prices faced by owners, requires revisions of the CPI because the basket of goods used to calculate the index contains both ownership items and rental housing. Of course homeowners do not also consume rental housing, so that the CPI will be biased downwards because rents have risen less rapidly than ownership costs. A revised CPI for

owners using the acquisition measure is presented in Table 5, column (5). This comprehensive index restores the original conclusion that incomes have risen more rapidly than prices. Homeowners, even first-time purchasers, have become better off.

After the revisions the contradiction between public opinion and the facts reappears. An alternative explanation for it may be that the public is concerned not with whether the over-all situation of a first-time home buyer has changed but with quite a different question. The public concern may be with whether it has become more difficult for the average household to buy its first house. The comparison is between the income of the average household and the purchase price of the average house. The other costs of homeownership are ignored, as are all other prices, and the issue of whether the 'average' house has improved in quality over time is regarded as irrelevant. The question posed in this manner deals with the welfare of only a small group in society: the first-time home buyer. All existing homeowners and those who wish to remain renters are not part of the purview. Furthermore, the comparisons over time are not an examination of the same households over time but rather an examination of a class of households: average-income, first-time homebuyers at different points in time.

One way to answer this new question is simply to compare the sales prices of houses with incomes. One index of house prices can be derived from a series published by CMHC (1977a) on the cost of homes financed under the National Housing Act in all of Canada (Table 5, column 3). This series reflects both the land and construction costs of a fairly standard size of house.[8] It does not capture changes in the prices of existing houses or of those financed outside the NHA. Houses financed under the NHA have been moving further and further from the city centre and are becoming relatively lower priced compared to all houses because of limits on the maximum loan available. This index will therefore understate the true price increase. The series shows house prices have not risen as rapidly as incomes since 1961, although for several years in that time they rose more rapidly.

Another measure of the rise in house prices is provided by the Canadian Real Estate Association's series (Canadian Real Estate Association, 1976), which is the average value of Multiple Listing Service (MLS) transactions in Ontario (Table 5, column 4). This series has the great advantage of including new and old houses from all across the city, including the land cost, and of being specific to Ontario. It suffers, however, from a number of serious disadvantages. Not only house

8 Statistics Canada now publishes a series on the selling prices of new houses adjusted for quality changes, but it begins only in 1970.

sales but sales of a small number of businesses, of raw land, and of rental dwellings are included in the average. (The MLS house price index begins only in 1969.) The series does not measure the price change of a standard house but only those which happen to be sold through MLS. The quality of houses sold through MLS can vary, and the fraction of all sales that uses MLS also varies. The impact of these problems on the credibility of the series is undetermined. The series remains probably the best measure of the price of houses when considering long periods of time, although less confidence can be placed in month-by-month variations, and it must be remembered that this index does not measure the change in price of a standard house.

Comparisons using this series show a different picture. House prices have risen *more* than incomes since 1961, rising more rapidly throughout most of the 1960s and for several years in the 1970s. This is the comparison that has contributed to the uproar about exploding housing prices and the difficulties facing purchasers of their first home. However, the differences between house price and income increases are scarcely dramatic.

A more dramatic result is obtained using a more accurate measure of the price of entering the housing market: the annual carrying costs of the mortgage. To a household the price of a house is important only insofar as it affects these costs. The down payment required also has a critical effect on a household's ability to buy a house. There has been no change in the difficulty of saving to buy because house prices have risen by about the same amount as incomes (assuming a constant ratio of down payment to the value of the house). A comparison between average annual carrying charges and incomes of families is presented in Table 6. The comparison was made with family income because this is the group that many feel 'ought' to own homes. Carrying charges have risen at a much greater rate than incomes, especially since 1965. These explosive rates of growth severely curtailed the number of families able to afford the average house: in the early 1960s about 75 per cent of the families in Ontario could purchase the average house, spending less than 25 per cent of their income on mortgage payments; but by 1975 this had dropped precipitously to 39 per cent. The criterion of whether a family can afford a house is simply income, but presumably many lower-income households have savings, perhaps embodied in a house they own, and so obviously could afford to buy a house.

Table 6 illustrates one of the major problems of housing markets in times of inflation. Mortgages are generally written so that the household must make a constant nominal payment. When house prices and interest rates rise because of inflation, these nominal payments rise dramatically. If the 25 per cent of income rule is used, many households will be denied a mortgage despite the fact that in several years the payments would drop to that level because incomes are rising

TABLE 6

Mortgage carrying costs and income 1961-75

Year	Ontario average MLS price (1)	Conven- tional mortgage interest rate (2)	Annual mortgage carrying charges (3)	Index of mortgage carrying charges (4)	Index of PDI per capita (5)	Percentage of Ontario families for whom annual mortgage carrying charges would be less than 25% of income (6)
1961	14 487	7.0	975	100	100	75
1965	16 815	7.0	1130	116	123	76
1971	27 254	9.4	2253	236	169	60
1975	49 211	11.4	4718	484	302	39

SOURCE: see appendix C.

rapidly. A calculation on U.S. data illustrates the problem (Moffit, 1977). In 1970, 46 per cent of households could afford the average-priced new home using the 25 per cent rule, but in 1976 only 27 per cent could. In 1970 it would take three years for a household with median income buying the median house to bring mortgage payments down to 25 per cent of income; yet in 1976 it would only take 4.5 years. A similar calculation for Canada indicates that although in 1975 only 39 per cent of families could afford to carry the average house using the 25 per cent rule, a family with median income would have payments of less than 25 per cent within one year.

This problem can be eased by either raising the 25 per cent criterion or using a graduated payment mortgage. CMHC offers its own graduated payment mortgages under AHOP and has encouraged private lenders to follow suit, but the response has been lukewarm.

Clearly the difficulties facing first-time home buyers have increased dramatically in the last decade. That is what explains much of the public concern, especially in light of the strong belief that all middle class families have the right to own a house.

Notwithstanding all the complexity and minutiae, a rough picture has emerged from these comparisons of shelter costs and incomes. The renter's situation has unambiguously improved, considering first rents alone and then all prices. The homeowner's situation is only slightly different. Using either the consumption or acquisition approach within an index of all prices reveals that homeowners have improved their lot too, a conclusion in sharp contrast to public perception of an eroding position. Only the very special issue of entry into the housing market reveals a squeeze between prices and incomes.

These aggregate data of course illustrate only the case of the average household and mask the situation of certain groups and regions, where a different picture may be drawn. Certain groups in society, for instance, have suffered because their incomes have not risen as rapidly as average incomes. And certain areas of the province, particularly large cities, have had more rapid price increases than elsewhere. The differences can be quite significant over intervals of several years, but over the period since 1961 the differences are not likely significant. For example, the 1976 index for Toronto MLS sales was 385, while for Ontario it was 366.

Furthermore, and of paramount importance, these comparisons have dealt only with changes over time. Large numbers of low-income households still cannot secure adequate housing despite increases in income. This problem was the central concern of housing policy in the mid-1960s. Although it is less emphasized today, it remains unsolved. The housing problems of those with low incomes, whether they are called housing problems or income problems, remain acute and ought to be the central focus of our redistributive housing policies. Unfortunately this has not been the case recently, as will be made clear in the examination of specific housing programs in the following chapters.

3
A framework for analysis

Considerable economic research has already been devoted to the influence of the public sector as a whole on income distribution. Attention has recently been shifting to detailed scrutiny of specific taxes or expenditure programs. For that reason this report, and much of the work at the Ontario Economic Council, has concentrated on program expenditures, without considering their financing.

We shall examine an extremely diverse selection of programs: some deal with direct government building, some with the provisions of the income tax laws, some with the ownership market, some with the rental market; some programs are very large, others relatively small. This diversity made it especially important to use a common framework so that the analysis is consistent across programs. The distribution of program benefits to groups in society could be characterized in different ways: recipients could be classified as urban or rural, as living in a central city or the periphery, as living in a growing region or a stagnant one, or as earners of labour income or capital income. With a view to the formulation of housing policy, it was decided to classify the distribution of benefits according to the measured money income of the household[1] and the age of the head of the household. Finally, because the programs were not universal there was a redistribution from taxpayers to participants so obvious as not to merit detailed study. Instead, the focus in each case is on the beneficiaries. Society, for

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1 There is considerable debate about which measure of income ought to be used in incidence studies (Bird and Slack, 1978). The measure of income adopted here was current money income because it was felt to reflect most accurately the notion of a household's ability to pay used in the public debate. This need not imply that only the subjective rather than an 'objective' analytic measure of incidence is important, as Bird and Slack (1978, 71) seem to suggest. The adopted measure is merely a means of characterizing the groups who benefit from a program.

whatever reason, has decided to assist this group. The questions then become: what is the value of the program to members of the group, how are the benefits distributed among them, and does this distribution meet our standards of equity?

This chapter outlines the method of analysis. The first section reviews how economists treat housing as a commodity and the operation of housing markets. The second describes the differential incidence framework. The third details the methods used to measure the value of housing subsidies to households.

MICROECONOMICS AND HOUSING

The analysis uses the framework and terminology of microeconomics, in particular the notions of commodities, markets, and prices. In this aspect it differs from much writing on housing, in particular that by non-economists dealing with housing assistance programs, and thus it warrants a short explanation. The application of microeconomics to housing is familiar to economists from the work of Muth (1960). An excellent discussion is available in Olsen (1969), on which much of what follows is based.

The most important assumption of the microeconomic framework is that there exists a homogeneous commodity called housing services. A dwelling unit, often called a housing unit, is presumed to yield a number of homogeneous units of housing service per unit of time. The dwelling unit could be an apartment, a row house, a semi-detached house, or a detached house. A dwelling unit that yields many units of housing service will command a high price, while another that yields few units will command a low price. Obviously under this assumption, there is no distinction between quantity and quality. What is normally spoken of as a physically deteriorated or slum dwelling unit is considered in this analysis to be one that yields few units of housing service per unit of time. A luxury dwelling unit (perhaps with the same floor space as the slum) is one that yields many units.

A unit of housing service is defined to be that amount of service produced by one unit of housing stock per unit of time.[2] Thus the number of units of stock and service are identical in one time period.

Housing services are what households demand for consumption. The assumption of a homogeneous good called housing services implies that it makes

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2 This assumption implies either that housing services are produced using only one input or that they are produced with a fixed coefficients technology. This assumption is relaxed in chapter 6 when dealing with the depreciation provisions for rental housing.

no difference to a consumer whether the housing consumed is owned or rented. There may be different financial implications to each form of tenure, but if the costs are alike the utility derived from consuming housing as an owner and as a renter is the same.

In popular discussion much emphasis is usually placed on the differences between the market for owner-occupied housing (mostly row and detached houses) and the market for rental housing (mostly apartments). In the simplest microeconomic approach these are not two distinct markets. Owner-occupiers and renters are treated as groups demanding housing services in a single market. Their demands are aggregated to form the total demand for housing services. Analogously, the total demand for any commodity is made up of the demands of different groups, for example high-income and low-income people, or urban and rural people.

The 'price' to a renting household of acquiring housing services is of course the annual rental paid to the landlord. The 'price' a homeowning household faces for acquiring housing services is the annual cost of homeownership, including the forgone earnings on equity, which can be thought of as a rent which the homeowner pays to himself. These costs as well as all the usual variables, such as tastes, incomes, and other prices, establish a household's demand curve for housing services. All the household demand curves (of both renters and owners) form the aggregate demand curve for housing services. At any moment the stock of housing is given, hence the quantity of housing services, which in conjunction with the aggregate demand establishes the equilibrium rent in the short run. Over time there can be changes in the stock of housing. These changes depend on rents and the costs of producing housing. The long-run supply curve of housing services, together with aggregate demand, determines long-run equilibrium rent.

This approach is shown in Figure 1a, which shows the two separate demand curves of renters $D_R D_R$ and owners $D_O D_O$, expressed in terms of the annual costs of homeownership, and their horizontal sum $D_T D_T$. In conjunction with the long-run supply curve $S_L S_L$ the equilibrium rent and total quantity of housing services Q_T are determined. The total housing services are divided between renters, who consume Q_R, and owners, who consume Q_O.[3]

It is usually assumed, and will be assumed here, that housing can be produced at constant cost (a perfectly elastic long-run supply curve) as depicted in Figure 1a. This assumption has been justified by Muth (1960), who found that construction wages and building materials prices did not vary with the volume of

3 There must be some reason why households choose to be either owners or renters, but this question is ignored in the model.
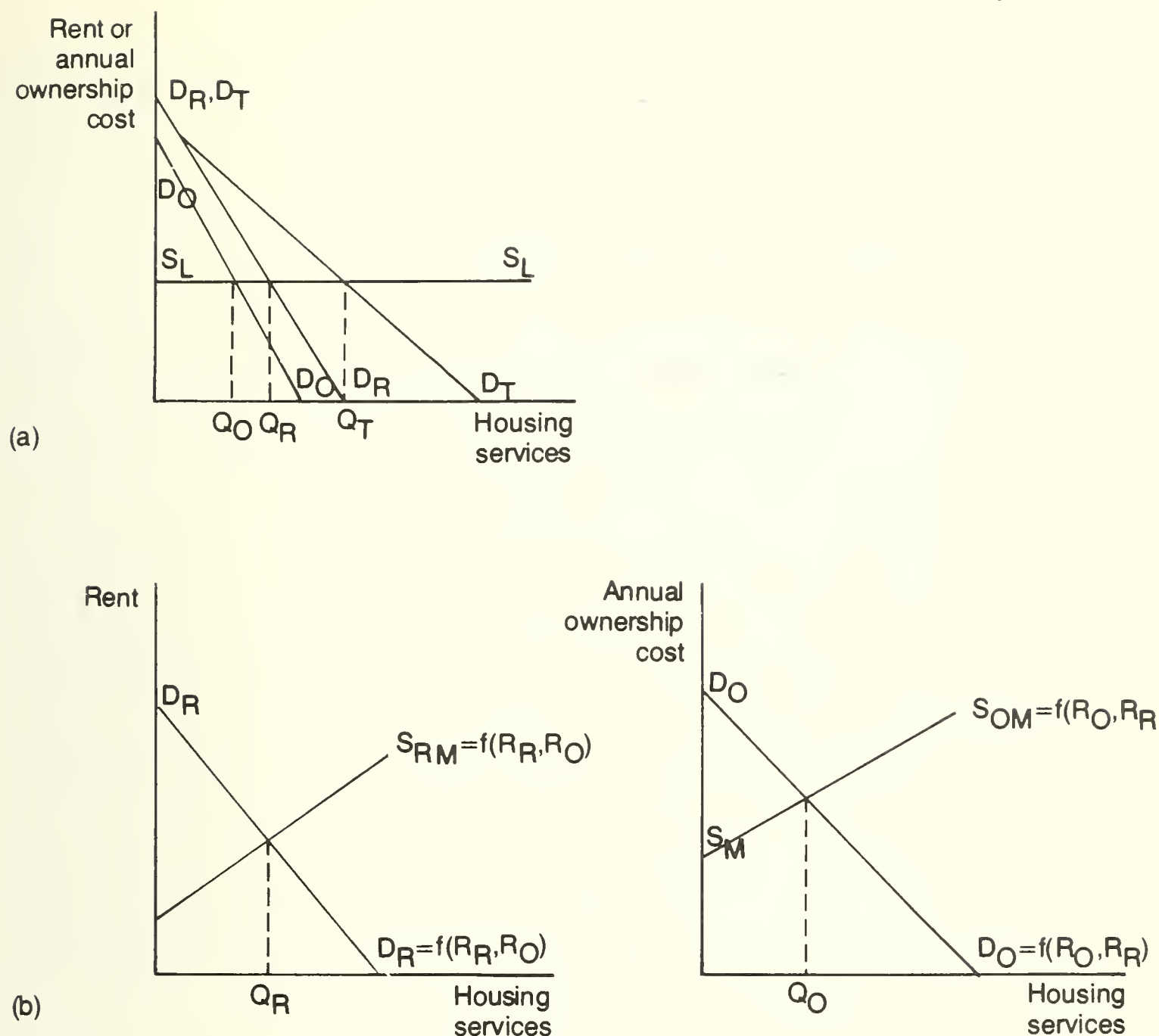
Figure 1
The market for housing services

construction. It is also argued that entry into the building industry is extremely free, firms entering easily to expand output in response to the signal of increased profits.[4]

This market determines the rent per unit of housing stock (which is identical to the price per unit of housing service); it remains, however, to determine the price per unit of housing stock, which is the price paid when a building is sold. If markets are perfectly competitive and in long-run equilibrium, the rental rate per unit of housing service will be related to the price per unit of stock in such a way

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4 Recent empirical work suggests that the long-run supply curve is not perfectly elastic (for example, de Leeuw and Ekanem, 1971; Grieson, 1973; Barton Smith, 1976). These findings are consistent with the results of residential location models, which suggest that increasing quantities of land can only be obtained at increasing cost.

that there is no incentive to increase or decrease the stock of housing, new construction just offsetting depreciation. The gross return to holders of stock must be just sufficient to induce them to hold the quantity of stock implied by the long-run equilibrium rent. This may be expressed as

$$R/P = L + d + t + a, \tag{2}$$

where R is the annual rent (price) per unit of housing service, P is the price per unit of housing stock, L is the long-run net rate of return to housing investment, d is the annual rate of depreciation, t is the annual rate of taxation on property, and a is the annual rate of maintenance.[5] The long-run net return to housing is obviously closely related to the mortgage rate of interest m. In this analysis the two rates will be assumed to be equal in equilibrium (although there should be a slight premium for the owner's risk). If the mortgage rate were below the long-run net return, investors would have an incentive to construct housing units until rentals fell, forcing the net return down to the mortgage rate; resources would leave the residential market if the mortgage rate exceeded the long-run net return. It is assumed that the mortgage rate of interest is exogenously established in the financial markets (for a further discussion of these issues see Muth, 1960).

The model is sometimes disaggregated to emphasize special aspects of the ownership and rental markets, usually in the medium run (Figure 1b). In the long run the two approaches are the same. The disaggregated approach identifies

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5 The usual method of expressing the relationship between rents and capital value equates the capital value to the discounted flow of net rents. Equation (2) can be shown to be the result of a discounting calculation. Suppose rents are R per annum to infinity, the costs of operation are C per annum, and the discount rate is i. The discounted flow of net rents is

$$\int_0^\infty (R-C)e^{-it}\, dt = (R-C)/i.$$

In equilibrium, the price will equal this discounted value. Assuming that the price also equals total construction costs and annual costs are a constant percentage of total cost,

$$P = (R-C)/i$$
$$= [R - P(d+t+a)]/i;$$
$$R = (i+d+t+a)P.$$

Therefore, if discounting is done at the mortgage rate of interest, equation (2) is derived.

two markets with separate demand and supply curves. Household choices of how much housing to consume as renters at price R_R will be strongly influenced by the annual costs as owners R_O, just as amounts consumed by owners will be influenced by rents. Similarly, the supply curves will be interrelated because a building can be either rented or sold for owner occupancy, and new construction can supply either market. The relationship between rents and prices holds for both markets as before. In Figure 1b each demand curve is shown as a function of price in both markets; and the supply curves (whown as medium-run curves) show the same relationship. Many studies regard these interrelationships as so weak that one market can be isolated and examined alone. While in the short run this may have some validity, as time passes it is less likely to be so.

This report considers the market as aggregating both owners and renters in the long run but remains aware of their separation in the medium run and on occasion comments in this vein.

SELECTING A METHOD OF ANALYSIS

This report discusses the influence of housing programs on income distribution in Ontario, more precisely how real incomes have changed as a result of those housing programs, or in economists' terms the incidence of the program. Much economic research has been conducted into tax incidence, that is, the influence of taxation on household incomes. An excellent survey of the tax incidence literature can be found in Break (1974). Much less work has been conducted on the incidence of expenditure programs. An up-to-date survey is available in McLure (1974). Both kinds of incidence are involved here. The method of analysis used in this report is like that prevailing in tax incidence literature.

Tax incidence analysis has usually been static rather than dynamic. Static incidence analysis assumes fixed supplies of input factors and compares incomes at two equilibrium positions. Dynamic incidence allows labour supply, savings, and investment to vary and to influence the rate of economic growth. The analysis examines how the rate of growth of income, or the amount and timing of lifetime income, changes as a result of a government action. A static approach was adopted for this report, largely because the growth models used in dynamic incidence studies are more applicable to the examination of broadly based taxes than to the study of specific small expenditure programs. Furthermore, most dynamic incidence models investigate changes in capital and wage income, rather than individual or family income, which is of most concern in housing policy.

However, certain housing issues have an important time dimension. The timing of income over a lifetime is a central concern. Housing consumption decisions are made on the basis of permanent rather than current income.

Households frequently desire to purchase large quantities of housing when they are young and their incomes relatively low, so they must borrow against future income using a mortgage. The problems facing young families seeking to purchase a home have been a dominant concern in the 1970s. The difficulties of retired persons with low incomes, either as renters or owners wishing to retain their homes, have attracted much attention too. All these issues would be most appropriately handled in a dynamic framework. But such basic concepts as life-cycle or intergenerational equity have not yet been defined, and progress in dynamic analysis has been slow even on the tax side (Break, 1974, 134). Therefore the ages of the beneficiaries of housing programs have been shown in the static framework.

Most incidence analysis of tax changes has attempted to consider separately the distributional effects of inflation, deflation, and unemployment caused by changes in aggregate demand (McLure, 1970). It seems appropriate to maintain this convention in the study of housing programs, although the effects of a given housing program will obviously differ greatly when resources are fully utilized than when they are not (Smith, 1974). Much tax incidence analysis and almost all expenditure analysis have simply ignored the redistribution resulting from the influence of a given government activity on aggregate demand. If the tax change or program under scrutiny is small, this procedure is justifiable. But if the changes are large it is clearly inappropriate. For most housing programs examined here, and especially for the public housing program and the tax exemption for imputed income from owner-occupied housing, the macroeconomic effects are too large to ignore.

If the influence of an entire program on income distribution cannot be decided without reference to macroeconomic issues, the influence of a marginal change in a program can be because the macroeconomic effects would likely be negligible. A marginal tax change is typically examined without considering any expenditure change in the familiar partial equilibrium specific incidence analysis. Similarly, a marginal change in a housing expenditure program can be examined without considering its financing or other offsetting expenditure changes.

Sometimes a policy-maker wishes to know who benefits from a given program and what the benefit is worth, and the analyst answers by pointing to the beneficiaries and offering an easily understood dollar value for the subsidy. Such a response must be treated with great caution, however, because it really reflects the benefits of a marginal change in a program, not the initiation of the program itself. (An analysis of marginal changes is presented in chapter 7.) As Tables 1, 2, and 3 show, expenditures on housing programs fluctuate by enormous amounts each year, and the changes in them being considered by policy-makers are not marginal, but large and discrete. The problems of macroeconomic effects

therefore must be confronted. If that is the case several approaches are possible, the two most common being balanced budget incidence and differential incidence (see Break, 1974; Musgrave and Musgrave, 1976).

The balanced budget approach compares current incomes of households with those that would prevail if a given program were initiated (or removed) and financed in a specified manner; the changes in aggregate demand following a balanced alteration in the budget are ignored. This approach has the obvious weakness of combining the effects of expenditure and taxation changes. Furthermore, any expenditure change could be financed by a multitude of tax (or borrowing) changes, and there is no a priori reason to select any one of them. The balanced budget approach is suited to the study of universal expenditure programs because the taxes used to finance them are often universal. But since most of the programs studied here were not universal the balanced budget approach had to be rejected.

The differential incidence approach was therefore adopted. The analysis is not of initiating a housing program but rather of substituting another of equal cost. The size of the public sector remains the same, so there are no macroeconomic effects. The 'equal cost' alternative had to be designed differently for each program, but it was always selected to leave the size of the public sector unchanged. If the existing program provided loans, the alternative would be a loan program of equal size. If the program provided cash subsidies, the alternative provided cash transfers. If there were publicly built houses selling for less than market value, the equivalent cost program would have the same expenditure, not simply expenditure equal to the difference between government costs and market value. Government expenditures, revenues, and borrowings are the same under the two programs.[6] There are therefore no macroeconomic effects to be considered.

Comparing changes from substituting one program for another of equal cost to the government implies that no unique incidence pattern can be analysed. There is always a comparison with some hypothetical alternative program, and

6 Rigorously, it cannot be claimed that a constant size of the public sector will ensure that aggregate demand is unchanged, because of relative price changes under different tax or expenditure regimes of equal size (see Shoven and Whalley, 1977). Only by coincidence would an equal cost program, such as a cash shelter subsidy substituted for a mortgage subsidy program, mean that the quantity and pattern of resources used by the government sector (or the private sector) remained the same. In theory one would seek not an equal-money-yield alternative but rather an alternative which meant an equal quantity and pattern of government resource usage. However, one cannot on a priori grounds establish what such an alternative would be.

there are an infinity of alternatives. Part of any differential incidence analysis is therefore the selection of the most appropriate alternative for comparison.

One possible choice is an alternative program that might in fact be considered by policy-makers as a substitute for the one under study. Unfortunately an analyst outside government can only speculate what alternatives are actually being considered.

Another possible alternative is the one considered to be the most effective in achieving the objectives of the existing program. In the case of housing many economists argue that shelter allowances are the standard against which any program should be compared. This approach would be appropriate if the purpose of the study were to argue for reform by showing how much existing programs diverged from the ideal one. Unfortunately it is often difficult to precisely identify the objectives of a program, especially the distributive objectives, although chapter 7 does compare all programs examined against a shelter allowance.

A third possibility is the alternative that is neutral in the sense of having no effect on the distribution of income. The existing program can then be judged either progressive or regressive in comparison. This approach, frequently used in tax incidence analysis (Break, 1974), is the one used here. The neutral alternative program was one that offered assistance to households in proportion to their income. The assistance would not distort household choice in any way and is assumed to have the same affect on a household as an unconstrained cash transfer. Even when the alternative program is not nominally in the form of a cash transfer, for example a loan at less than market rates, it is assumed to be regarded by its recipients as a cash transfer. The loan could be reinvested at market rates, and the household would then enjoy the difference between the two interest payments as a cash transfer. If this neutral assistance were offered to a group of households, there would be no change in the distribution of income as measured by the Gini coefficient; each household would enjoy the same percentage increase in income. This is like the notion of a neutral tax system in which all households pay the same proportion of income. The combination of a neutral tax and a neutral expenditure by these definitions leaves all household incomes unchanged by the operation of the fiscal system.

This approach meant that the same method could be applied to a number of very different programs. It seemed the most appropriate one also in the context of the larger debate about the redistributive effects of the public sector.

In a differential incidence analysis it must always be remembered which alternative has been used. There is a different pattern of incidence for each

alternative. In chapters 4, 5, and 6 the neutral alternative offering assistance in proportion to income is used, and in this comparison many existing programs appear favourable for low-income households. In chapter 7 existing programs are compared with a shelter allowance offering assistance which declines as income increases, and in this comparison many programs appear unfavourable to low-income households.

Who benefits under the alternative program is important as well. The alternative might benefit all households, only those eligible under the program being examined, or only those who actually participate in the program studied. It was decided that the households participating in the existing program would also participate under the alternative. The alternative, therefore, is a neutral program with respect to income distribution within the class of beneficiaries: each household in the class would enjoy the same percentage increase in income.

The decision to restrict the alternative to existing participants was problematic, but it seemed best. Many housing programs, indeed most, offer assistance to only a tiny fraction of those eligible. If the neutral alternative were offered to all eligible households, the changes in real income would be very large for current beneficiaries because the benefits would be very small under the alternative, being much more widely spread. These changes would be swamped in averaging over everyone in an income class. It seemed much more important to accept the reality of current beneficiaries and focus on the redistribution within that group.

Why only a fraction of the eligible are served is a matter for speculation. Probably this was the political intention. The question of who is served is examined separately by estimating the fraction of each income class participating in the program. If an existing program is judged to be neutral, there would be no change in the incomes of participants if the neutral alternative were substituted; however, the existing program may serve a small percentage of the poor and a higher percentage of the rich.

This method of analysis makes possible a discussion of both vertical and horizontal equity. Vertical equity refers to the proper pattern of unequal benefits among persons with unequal incomes; while horizontal equity refers to equal benefits for people with equal incomes (see Musgrave and Musgrave, 1976, for a discussion of these principles on the tax side). A program can be assumed to comply with our concept of vertical equity if it is similar to, or progressive compared to, the neutral alternative. This does not completely capture the notion of vertical equity, because some households of low income will be outside the program while others of higher income are participants. Since housing programs were clearly not intended to be universal, this vertical equity

problem will always arise. Nevertheless, households should have at least an equal probability of participating in the program, or even be more likely to as income falls. Thus it may be argued that if the percentage of the entire income class participating rises with income there is a problem of vertical equity. Obviously since every program assists only a small fraction of those eligible, they all violate the principle of horizontal equity.

The final issue is whether to use partial equilibrium or general equilibrium analysis. Although almost every incidence study must decide this question, there exist remarkably few examinations of it. A notable exception is Shoup (1969) in the course of a discussion of tax changes.

Shoup outlined four conditions which must hold if partial equilibrium analysis (which considers only changes in the prices of the taxed commodity and the change in the number of units sold) is to be used 'without yielding results appreciably incomplete or incorrect.' First, the tax must be narrowly based. Secondly, the movement of input factors to non-taxed industries must not appreciably depress the input factor supply curves of those industries. Thirdly, the change in the price of the taxed product must not appreciably affect the demand schedules for non-taxed products. Fourthly, the tax revenue must be so used as not to influence appreciably the demand and supply schedules of the taxed industry or those of industries that are rival or complementary.

Some of the comparisons under a differential incidence approach discussed in this report can be characterized as changes in narrowly based commodity subsidies. They concern only one good, housing, and only a small fraction of all housing consumers are affected by the change. The further three conditions also hold for the substitution of one program for another, a fact implying that a partial equilibrium approach might be suitable. The decrease in factor supply to the non-subsidized industries is unlikely to affect significantly the supply schedules of those industries, because there seems no obvious reason to suspect a high elasticity of factor supply to subsidized housing projects and because the inputs used in subsidized housing projects are a small fraction of total usage of similar inputs in other areas (mainly in other residential and non-residential construction). The demand schedules of other goods are unlikely to be altered significantly by the program substitutions. The taxes used to finance a government activity are of little relevance in differential incidence approach because the revenues are the same in the two cases.

In summary, consider a hypothetical program which makes cash transfers to a group to assist with rental expenditures. The average payment by income class is listed in Table 7, column (1). Since these payments are direct cash transfers, the amount of the payment may be considered the value of the

TABLE 7

Sample calculation of differential benefits and differential incidence

Income ($)	Average payments under existing program ($) (1)	Average payments under neutral alterna- tive ($) (2)	Average differ- ential benefits ($) (3)	Differ- ential inci- dence (4)	Percent- age of entire income class partici- pating (5)	Average payments under the second definition of neutrality ($) (6)
0 - 4,999	350	250	−100	−0.040	1	3258
5,000 - 9,999	800	750	− 50	−0.007	10	1075
10,000 - 14,999	1250	1250	0	0.0	6	844
15,000 - 19,999	1700	1750	50	0.003	1	714
20,000+	2400	2500	100	0.004	1	609

program to the participant. One cannot state, however, that the incomes of households have risen by this amount, comparing the situation before and after the initiation of the program. There would be many macroeconomic effects and relative price changes altering real incomes. Instead, a comparison is made between the household's income under the program and its income if the existing program were replaced by an equal-cost neutral alternative. The average payments to households by income class under the neutral alternative are presented in column (2). The same households receive payments under the two programs. The change in income resulting from the substitution of one program for another, the difference between column (2) and column (1), is presented in column (3). This change is termed the differential benefit. Low-income households suffer a loss in income, while upper-income households enjoy a gain. Compared with the neutral alternative, the existing program is progressive.

A more precise measure of progressivity can be found by expressing the differential benefits as a ratio of the average income of the program participants in each income class (column 4), a proportion termed the differential incidence. This ratio rises with income; thus the existing program is progressive compared to the neutral alternative. This conclusion only applies, of course, within the group of participants. Column (5), recording the percentage of the entire income class which participates, reveals that the highest participation rates are in the middle-income ranges. The initiation of the program likely transferred resources to the middle income group. There is a vertical equity problem at low levels of income because at first the probability of participating rises with income.

Incidence studies usually express the results as the ratio of total net benefits per income class to the total income of all households in an income class; whereas column (4) has expressed the results as the ratio of total net benefits per income class to the total income of participating households in an income class. The results of this study may be converted to the usual form for any income class by multiplying column (4) by the fraction of the income class participating (column 5 divided by 100), under the assumption that the average income of all households in an income class is equal to the average income of participants.

When separate programs are examined in the following chapters the results will be presented as in columns (3), (4) and (5) of Table 7. Columns (1) and (2) have been included here only to illustrate the method of calculation. Column (1) could be interpreted as the average benefit per income group of a marginal change in the existing program. These results will be presented in summary form in the concluding chapter.

Before leaving this example, a number of points should be noted in the interpretation of the results. First, careful attention should be paid to the definition of a neutral expenditure program: the benefits are a constant percentage of income. A progressive expenditure program would have the ratio of benefits to income falling with income; while a regressive program would have the ratio rising with income. The absolute level of benefits in this neutral program *rises* with income as shown in column (2). It may at first seem incorrect to call the flow of benefits in column (2) neutral; the rich get more than the poor. However, it is indeed neutral in the sense that if this flow of benefits were added to income there would be no change in the Gini coefficient, which measures the degree of inequality of the income distribution. This definition of a neutral expenditure is analogous to the definition of a neutral tax: a tax which takes a similar percentage of all incomes. The combination of a neutral tax and a neutral expenditure would produce no change in each household's income as a result of the operation of the fiscal system.

Nevertheless, this definition seems to contradict the idea of a just fiscal system: from each according to his ability, to each according to his need. On balance such a system would redistribute income. Smolensky and Gomery (1973) have used a different definition of neutrality, one that reflects this notion of a just fiscal system. An expenditure program is neutral if, as income rises, the percentage fall in benefits is equal to the percentage rise in income; such a pattern is presented in Table 7, column (6). A progressive pattern of benefits occurs if the percentage fall in benefits is greater than the percentage rise in income. This definition is like the definition of a neutral tax if an expenditure is regarded as a negative tax and a neutral tax is defined as one for

which the percentage increase in tax collections is equal to the percentage increase in income. This definition was rejected for use in the detailed examination of each program because the combination of a neutral tax and neutral expenditure would not produce a neutral fiscal system. This alternative was used in the final chapter, where the differential incidence results are presented in summary form.

A second point concerns the sorts of beneficiaries included in the analysis. The initiation of a program would cause price, wage, and output changes, many of them completely unconnected with the housing program which would change the incomes of a large number of households. Furthermore there are a number of non-pecuniary benefits (and costs) which influence the welfare of households. Of particular interest in recent years has been the gain in utility, termed 'donor benefits,' of households who willingly transfer income to those regarded as deserving (for example, see Hochman and Rodgers, 1969). These changes are of vital concern to a study of the redistribution following the initiation or cancellation of a program, but they need not be considered when a differential incidence analysis is used. Because the public sector remains the same size and the direct beneficiaries remain the same, these factors do not change when one program is substituted for another. Any changes that do occur are assumed to be too small to warrant scrutiny. This approach permits exclusive concern with the direct beneficiaries.

Finally, this analysis does not look at the redistribution which occurred after these programs were initiated or would occur if such a program were begun. From a policy point of view, the most valuable perspective examines the results of a contemplated change. Bird and Slack (1978) argue that this is the only policy-relevant approach. What matters is the existing distribution of income and wealth, whether what exists is desirable, and how a program change will alter these distributions. A full-scale simulation model of the housing sector and the entire economy would be required, one that could interpret changes in terms of the impact on household incomes, but no such model exists.

Moreover, the analysis is not a general equilibrium incidence analysis in the tradition of Harberger (1962). While intellectually appealing and logically elegant, such an approach cannot deal with the complexities of individual programs. It is much more suited to analysis of broadly based taxes or expenditure programs rather than the housing programs examined here, which reach only a tiny percentage of households. Moreover, the results of such models are in terms of changes in wages or returns to capital, not household incomes. Aaron (1972) analyses a hypothetical universal housing subsidy using such a framework but rejects it for the scrutiny of individual programs.

MEASURING THE BENEFITS

In the example outlined above the hypothetical program offered cash transfers to households to assist with rental expenditures. Since the payments were direct cash transfers less than the amount already spent on rental, the payment could be assumed to be the value of the program in the sense of the income lost if the program were replaced by another. The measurement of the benefits must be done in units comparable to those used to measure income because the focus of the investigation is income redistribution. This is easily and directly done for the hypothetical program of cash transfers. For the housing programs examined here, however, the measurement cannot be so easy and direct.

Most housing-related activities of government, whether a rental assistance or ownership assistance program or a provision in the income tax laws, reduce the price of housing services to a participating household. The price per unit of housing service is below that which prevails in the private market. For example, the public housing tenant pays a reduced rent; or the holder of a reduced interest rate mortgage has lower monthly payments for his house; or a special depreciation provision may reduce the rents on a building.

How then does one evaluate the benefit to a household of participating in the program? One measurement would be the difference between the market value of the housing the household consumes and the actual payments made under the program. A variant of this approach is sometimes used if the public sector is involved in the construction of housing. If the public sector is an inefficient builder of housing, the market value of the housing produced will not reflect the value of the resources used to produce it. A better measure of the subsidy in such a situation would be the difference between the value of the resources used to produce the housing and the actual payments. This variant will not be used here because only one of the programs examined, public housing, involves public sector construction, and even there a recent study has shown that there is little inefficiency (Staranczak, 1977).

The difference between the market value of the housing and actual payments is an intuitively appealing measure; it represents the extra money which would have to be paid by the household to consume the same bundle of goods and services if the program were removed. It also measures the cost to the taxpayers of making the subsidy available (assuming market value is equal to resource cost). Nevertheless there are problems with this measure. The context is a study of income redistribution. The measure should reflect the income equivalent to the household of the program because the measurement is to be used to adjust their income. However, the income equivalent in the eyes of the household is not the market value measure but rather the cash transfer which would leave the

household just as well off if the program were stopped. The household would be indifferent as between remaining in the program while paying the reduced housing price and accepting the cash transfer while paying the full market price for housing. This income equivalent measure is called a consumer's surplus measure.

In almost every case, the consumer's surplus measure is less than the market value measure — the value of the subsidy in the eyes of the recipient household is less than the cost of the subsidy to the donor taxpayers. The difference is a measure of the inefficiency of the transfer program. The inefficiency results because the household would rather spend some of the subsidy on other things besides housing; it is willing to accept somewhat less in cash with no restraints on how it would be spent. The additional housing does not match the household's preferences. The restriction on household choice is especially important in many housing programs in which not only is the subsidy in the form of reduced prices but also only one quantity of housing services is offered at this reduced price. There is only one housing unit offered, take it or leave it. Public housing is a program of this sort. Other programs offer more choice, such as the Home Ownership Made Easy plan, but almost never can the household purchase any quantity of housing it desires at the reduced price.

In the analysis of each program, both the market value measure and the consumer's surplus measure will be used, the difference reflecting the inefficiency to an individual household.[7] These measures are used in the differential incidence framework outlined previously; in the example they appear as column (1) used to compute differential benefits.

The effect of a housing program on a household and the market value and consumer's surplus measures can be made more precise by utilizing the economist's model of consumer choice. Extensive work has been done applying this model to an examination of public housing in the United States (DeSalvo, 1971; Smolensky and Gomery, 1973; Barton and Olsen, 1976; Murray, 1975 and 1978). The analysis of public housing here is based on this work. The model had to be extended to handle ownership programs and income tax provisions. Thus for the first time all the major housing programs can be examined on a consistent basis.

Consider the situation of a household when it does not participate in a housing program. The household has an income Y, which it spends on housing

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7 One cannot conclude that replacing the entire program with a system of cash grants would be more efficient. Such a conclusion demands a general equilibrium analysis, just as an analysis of excise versus income taxes requires a general equilibrium analysis (Little, 1951).
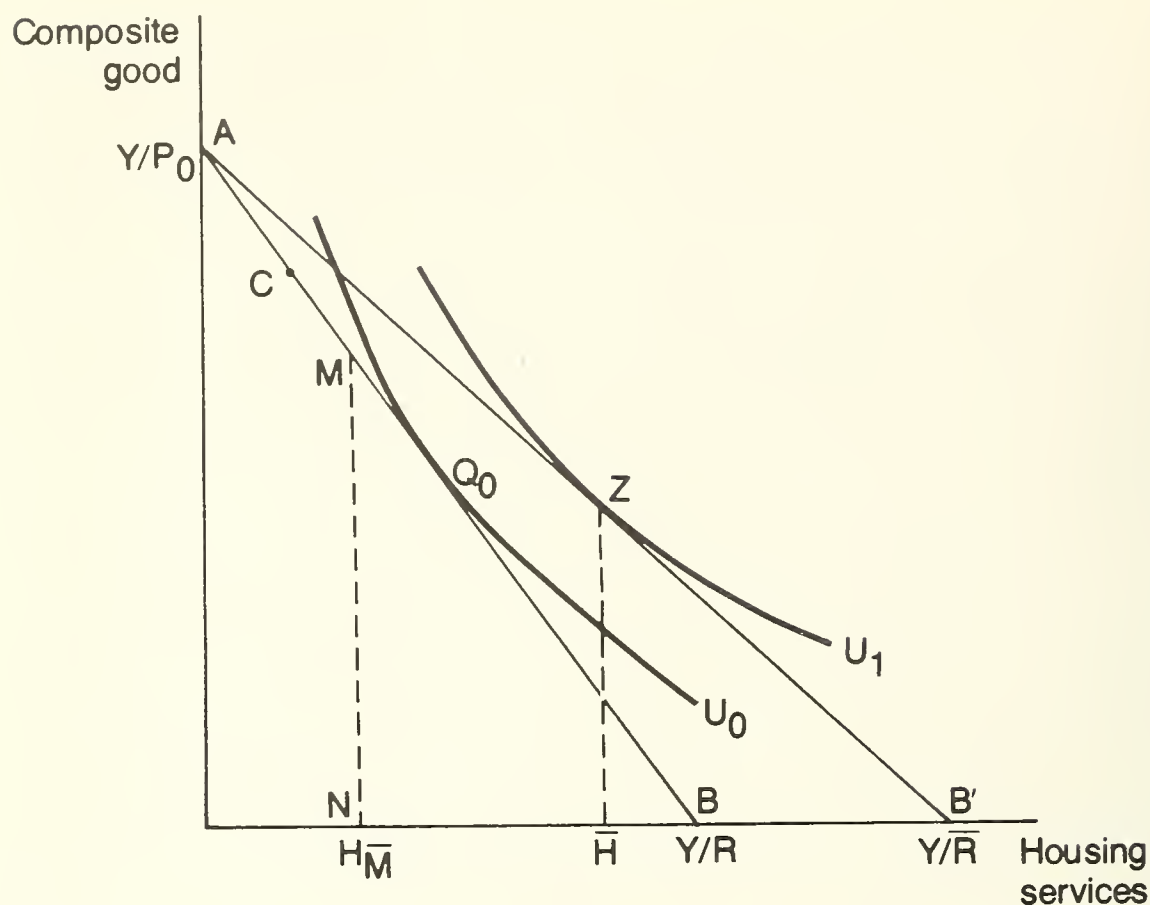
Figure 2
Household choice with a hypothetical housing program

services and all other goods, represented by a composite good. If it were to rent housing it must pay R per unit of housing service. The price per unit of the composite good is P_0. The pairs of housing and composite good available to the household may be represented by line AB in Figure 2. The intercept A would be Y/P_0, and the intercept B would be Y/R. This treatment of the good housing assumes it to be a homogeneous commodity as discussed in the previous section.

Suppose a housing program reduced the rental rate to $\bar{R}$ with no constraint on how much housing could be purchased. The choices available to the household can be represented as line AB' in Figure 2, the intercept B' being $Y/\bar{R}$. Some housing programs might make only a few of the points on AB' available to the household, while others might make only one point available. In order to maximize its utility, the household would choose point Q_0 without the program and point Z with the program. At Z, the household consumes $\bar{H}$ units of housing services and $(Y-\bar{R}\bar{H})/P_0$ units of the composite good. The household has enjoyed an increase in utility from U_0 to U_1.

The market value measure of benefits is just $R\bar{H}$ less $\bar{R}\bar{H}$. It is the vertical distance between line AB and a line parallel to AB through Z, assuming P_0 is equal to unity.

The consumer's surplus measure of benefits graphically is the vertical distance between AB and a line parallel to AB tangent to the indifference curve U_1 (again $P_0 = 1$). This can be easily seen as the income transfer which would permit the

household to maintain the utility level U_1 enjoyed under the program if it is no longer in the program and is forced to pay the market price for housing services.

The algebraic measure can be developed easily. Assume that the household has a Cobb-Douglas utility function:

$$U = H^b \ C^{1-b}, \tag{3}$$

where U is the utility level attained, H is the quantity of housing services consumed, and C is the quantity of composite good consumed. The utility-maximizing household will have demand functions as follows:

$$H = bY/R,$$
$$C = (1-b) Y/P_0. \tag{4}$$

The housing demand function has unitary price and income elasticities roughly consistent with existing empirical estimates (see de Leeuw, 1971; Carliner, 1973). Under the program, the household achieves utility $\bar{U}$. The total income Y_T necessary to achieve utility level $\bar{U}$ when paying the market price for housing may be calculated using the demand functions (2) as follows:

$$(\bar{H})^b \left[(Y-\bar{R}\bar{H}) / P_0 \right]^{1-b} = \left[bY_T/R \right]^b \left[(1-b) Y_T/P_0 \right]^{1-b}$$
$$Y_T = \left[R\bar{H}/b \right]^b \left[(Y-\bar{R}\bar{H})/(1-b) \right]^{1-b}. \tag{5}$$

The income transfer necessary to achieve $\bar{U}$ is therefore $Y_T - Y$. Actual computation of the consumer's surplus measure requires knowledge of the b parameter of the Cobb-Douglas utility function. This parameter is the fraction of income spent on housing by a utility-maximizing household and was separately estimated, usually using data on households of similar income that were not in the program under study.

This is the framework used to study public housing in the studies cited above. Several of them assumed the Cobb-Douglas utility function, while others have estimated more complex functional forms. Unfortunately, data limitations did not permit use of any form save the Cobb-Douglas in this report. The results will therefore be sensitive to this assumption. Murray (1975), using both CES and Cobb-Douglas utility functions, found that, although both showed the same aggregate measure of benefit, differences did occur when the benefits were distributed by age and income. Aaron and von Furstenburg (1971) offer a small model to explore how measures of benefit are sensitive to the price elasticities of demand in a CES utility function. Measuring the efficiency of a subsidy as the

difference between the market value and consumer's surplus measures divided by the market value measure, the efficiency could vary by a factor of three over a realistic range of price elasticities.

This model of consumer choice can be extended to deal with the ownership of housing as well. Ownership involves more than direct payment for housing services in the form of mortgage payments and taxes. The housing owned must be maintained, and it depreciates. In addition, the household has equity in the house and makes an implicit payment to itself as a return on the equity. A model of ownership choice must embody all these costs. As well, it must portray the savings of a household, not just its current income.

Assume that the household has earned income Y and savings S from past periods. The household may rent housing and invest its savings in a financial asset yielding an annual return m. Alternatively, the household may purchase housing using savings as a down payment and securing a mortgage at annual rate m. The relationship between the rent per unit of housing service and the price per unit of housing stock developed earlier is restated here. This assumes that there is no price appreciation and hence no capital gains from homeownership:

$$R/P = m + d + t + a. \tag{2'}$$

If the household were to purchase housing, there would be a budget line describing the pairs of housing services and composite good available. It will be assumed that the household does not depreciate the housing it owns or consume its savings in the time period under consideration. Although this assumption is somewhat restrictive, it captures the essential reality for most homeowners and greatly simplifies the analysis by permitting a one-period model. If the household spent all its income on the composite good, it could consume $(Y + Sm)/P_0$ units, which would be an intercept of the budget line. To purchase one unit of housing stock, using savings, at price P, the household must forgo earnings of Pm and pay Pt in property taxes, Pa in maintenance, and Pd in depreciation. The annual cost of the unit of housing stock is $P(m + d + t + a)$. It can be easily shown that the household will be indifferent whether to use savings or to use a mortgage while leaving savings in a financial asset to purchase housing stock.[8] It will be assumed that all savings are used before a mortgage is secured. The cost per unit of housing stock using a mortgage will be mortgage interest Pm, plus $P(d + t + a)$, which is the same as the cost using savings. The budget

8 If the household were to use a mortgage, the cost would be mortgage interest Pm plus $P(d + t + a)$, which is just the cost using savings.

line of an owner will therefore be a straight line ACB, segment AC representing housing purchased without a mortgage and segment CB with a mortgage (Figure 2).

In this slightly more complicated world, which includes savings, the household could of course choose to rent housing. Recognizing the relationship between rents and prices in equation ($2'$), it is evident that the cost per unit of housing is identical in both forms of tenure. The budget line as owner and as renter are coincident, and the household is indifferent as between owning and renting. In reality, because of special income tax treatment of investment in owner-occupied housing, households with savings are not indifferent to the question of owning or renting. The model is modified to deal with income taxes in chapter 6, where these issues are fully discussed.

The choices facing an owner can be modified to reflect the realities of the mortgage market. Households cannot secure a mortgage for 100 per cent of the value of a house; rather, they must supply some equity, often as much as 20 per cent of the house value. The savings of a household will place a maximum value on the quantity of housing stock it can purchase. Furthermore, households cannot secure a mortgage so that the monthly payments consume all income; rather lenders will normally permit only 30 per cent of income to be spent on housing. The income of a household will place a maximum value on the quantity of housing stock purchasable. Either the savings or the income constraint can be binding on a household. In Figure 2 the choices available to an owner are more realistically represented as line AMN, with the maximum quantity of housing purchasable $H_{\overline{M}}$. Many households with few savings or wishing to spend a high fraction of their income on housing (often low-income households) will rent rather than own housing and achieve maximum utility on segment MB of the renter's budget line.

This modification of the model to depict the owner's situation can be used to represent the influence of homeownership assistance programs on household choice and to calculate market value and consumer's surplus measures of benefit. For example, a program which offered reduced interest rate mortgages would leave the owner's budget line unchanged in the region where savings were used to purchase housing stock. Then the budget line would become less steep, and the maximum constraint would be moved to the right (if income were the constraining factor). Knowing the market value of housing consumed and the actual payments, the two measures of benefit could be calculated as outlined before, with a small adjustment for the expanded notion of income.

These measures of benefit, within a differential incidence framework, are used in the next three chapters to examine rental programs, ownership programs, and the income tax laws on a consistent basis.

4
Rental housing programs

Programs dealing with the rental housing market have always formed the bulk of the assistance provided to low-income households. In the early 1950s several provinces suggested that CMHC ought to subsidize the purchase of houses by low-income groups (Dennis and Fish, 1972, 266), but the idea was rejected as too costly and because of political opposition to the subsidization of the acquisition of an asset by a household.

The rental housing programs were relatively modest in size until the mid-sixties but expanded significantly thereafter. Public housing, entrepreneurial (limited-dividend) housing, and non-profit housing were the principal vehicles for assistance and showed the 'something-for-everyone' approach of housing policy. Public housing provides publicly built and managed housing with direct assistance to reduce rents and is intended to assist those with the very lowest incomes. Entrepreneurial housing offered a lower level of assistance and was intended for households with slightly higher incomes. Non-profit and co-operative housing were roughly similar. Assistance was provided for moderate-income households, although only a small fraction of eligible lower-income households were helped under the other programs.

During the early 1970s many new rental programs were started, a number of which have since been discontinued. Most of them are described in appendix A, and a complete list is available in Ontario (1977a). The largest of these new programs was the Assisted Rental Program (ARP) operated by the federal government from 1975 to 1978, which reduced the rents on housing suitable for moderate-income households. Some of the smaller programs use a rent supplement approach which alters the method used in the public housing program to assist very low-income households. Assisted households are more dispersed in the community and live in privately owned buildings. Ontario

Housing Corporation pays the landlord the difference between the market rent for the unit and the rent paid by the household. This approach holds promise as a remedy for some of the problems of public housing and will be watched with considerable interest. However, it is as yet too soon to see whether a significant change has been made in the approach to assisting low-income households. It was also during this period that rent controls were introduced in Ontario.

In April 1978 the federal government announced a number of proposals, mentioned above, as a framework for future rental assistance. Public housing is to be replaced by a system of assistance to provincially or municipally owned non-profit corporations. Public housing, non-profit housing, and co-operative housing will all operate in the same fashion; mortgage funds will be secured from the private sector,[1] and the federal government will offer a grant equivalent to an interest rate reduction on the mortgage loan, which will permit some of the tenants in a building to be charged a reduced rent geared to their income. The provincial government has not announced whether it will augment the federal contribution. The Rent Supplement Program will continue but will likely remain small. Rent controls seem destined to continue as well.

In this chapter the three principal rental housing programs of the 1965-75 era are discussed. First the details of the program in the year for which the data were analysed are outlined. Then a method of estimating the direct benefits to tenants is developed, and estimates are made by income and age class. The chapter concludes with some comments on the operation of rent controls in Ontario.

PUBLIC HOUSING

The program
The public housing program, more properly — but not popularly — called the rent-geared-to-income program, has been since its inception the major vehicle for assisting the lowest-income families. After the NHA revisions of 1964 it grew rapidly in Ontario, providing almost 15 per cent of the housing starts in 1970 (Table 8). Until the mid-1970s the majority of the units were built for families, but recently a greater percentage has been for senior citizens.

At the request of a municipality, the Ontario Housing Corporation selects a site, calls for tenders, and contracts for the construction of public housing units.

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1 Public sector funds are available to private groups from CMHC as a lender of last resort. Public funds are available to all non-profit groups for purchase and renovation of existing stock.

TABLE 8

Public housing activity, Ontario 1964-76

Year	Units	Loans ($000)	Loan per unit ($000)	Percentage of all housing starts in Ontario
1964	40	261	6.5	—
1965	2,919	36,120	12.4	4
1966	4,661	59,206	12.7	9
1967	7,187	95,336	13.3	11
1968	7,739	87,472	11.3	10
1969	11,054	130,455	11.1	14
1970	10,385	128,438	12.4	14
1971	11,264	152,736	13.6	13
1972	8,466	113,681	13.4	8
1973	8,028	105,341	13.1	7
1974	5,287	82,174	15.5	6
1975	5,432	104,555	19.2	7
1976	5,638	116,720	20.7	7

SOURCE: CMHC (various years)

The housing projects are managed either by a local housing authority or by OHC. The federal government provides a loan for 90 per cent of the capital cost and the province the remaining 10 per cent. The operating subsidy is shared: 50 per cent contributed by the federal government, 42 1/2 per cent by the province, and 7 1/2 per cent by the municipality. Recent changes announced delegate more responsibility to the local level for the planning, developing, and management of assisted rental housing. Municipalities now may undertake public housing projects on their own or contract with the Ministry of Housing to act as their agent using the same cost-sharing arrangements as always existed. All new projects are to be managed locally, and existing projects are gradually being transfered to local management.

Tenants, whether families or senior citizens, are charged rents based on their incomes. The scales are slightly different, but the family scale will suffice as an example. If the family earns over $4800 a year they are charged a rent of 25 per cent of 'income for rent purposes,' the percentage falling as income declines to a low of 17.8 per cent for an income below $2160 (Table 9). In the calculation of 'income for rent purposes,' deductions are permitted for a working spouse, working children, and dependants. If a tenant is on provincial or municipal assistance (General Welfare Assistance or Family Benefits Allowance), the rent charged is identical to the shelter component of their assistance payments.

TABLE 9

Family rent-geared-to-income scale, Ontario 1975

Annual family income ($)	Monthly rent ($)	Rent/income ratio
2160	$ 32	17.8
2520	38	18.1
2748	44	19.2
3000	51	20.4
3300	59	21.5
3636	68	22.4
3936	78	23.4
4368	88	24.2
4848	101	25
4848+		25

NOTE: Annual family income means income for rent purposes, which permits certain deductions (see appendix E). Monthly rent includes charges for heat, water, hot water, stove, and refrigerator.
SOURCE: Ontario (1975b, 21)

In principle, tenants are selected on the basis of housing need rather than income, considering such factors as the quality of present accommodation and the percentage of income spent on rent (for senior citizens income is used as one of the criteria); but of course income is well correlated with housing need. The criteria used to establish need for families are presented in appendix E. Rents are adjusted annually, but a tenant need not leave no matter how high his income becomes. There is always a waiting list for accommodation provided by this program.

Measuring the benefits
The previous chapter discussed the problems of attempting to develop measures of the income redistribution from housing programs. The comparison made here is between the existing program and an equal-cost program with benefits accruing to program participants in proportion to their incomes. The effects of instituting a public housing program on inflation, employment, and growth can therefore be ignored. It is assumed that the market for housing and the composite good are in equilibrium, that long-run supply curves are perfectly elastic, and that program beneficiaries would have the same hours of work under the two programs. These assumptions mean that relative price changes due to resource reallocation can be ignored, allowing the choices facing a household under the program to be presented diagrammatically and making possible the use

of a consumer's surplus measure of benefit. Only the benefits to tenants need be considered.[2]

It is interesting to begin by speculating briefly on what the distribution of benefits from the public housing program would look like if the comparison between the program and pre-program worlds were made. The effect of the program on rents and housing prices is unlikely to be very significant. The demand for rental housing is reduced as program participants leave the private market for publicly supplied housing. The downward pressure on rents will be offset to the extent that existing housing was demolished to permit the new construction. The decline in rents is likely to be most apparent for small bundles of housing services, and there will be little influence on other rents or house prices. Thus there will not be significant changes in the real incomes of most householders as a result of price changes.

In this framework benefits are mainly of three sorts: direct benefits to tenants from participating in the program, non-tenant benefits to the donors of the transfer equal to the resource cost of the program less payments by tenants, and non-tenant benefits from the positive (or negative) externalities resulting from the construction of public housing units (preceded perhaps by demolition of existing housing). The most significant benefits of the public housing program obviously accrue to tenants.

The extant sources on non-tenant donor benefits deal mainly at a theoretical level with the issues of transfers in a Pareto-optimal world (see Olsen, 1971, and sources cited there), providing no actual estimates of benefits. If these sorts of benefits accrue to all households because the public housing program is unanimously supported, the influence on income distribution is likely to be very small. However, if they only receive the support of a small elite (powerful enough to impose the program) the benefits are likely to be large and losses will be incurred by others. Several attempts have been made to measure the externalities of public housing through changes in land values, and they have found that public housing in poor areas may increase the value of surrounding land but does not change the aggregate land value in the city (see Muth, 1973, for a discussion of this literature).

The differential incidence approach used here considers only tenant benefits. A household consumes housing and a composite good, has an income of Y, and faces price P_0 of the composite good and rental rate per unit of housing stock of

2 The literature on tenant benefits is voluminous and continues to grow. Work by Prescott (1964), Olsen (1968), and DeSalvo (1971) has been extended and developed, principally using the framework of consumer's surplus also utilized here. Examples are Murray (1975) and Barton and Olsen (1976), which cite most of the work in this area.
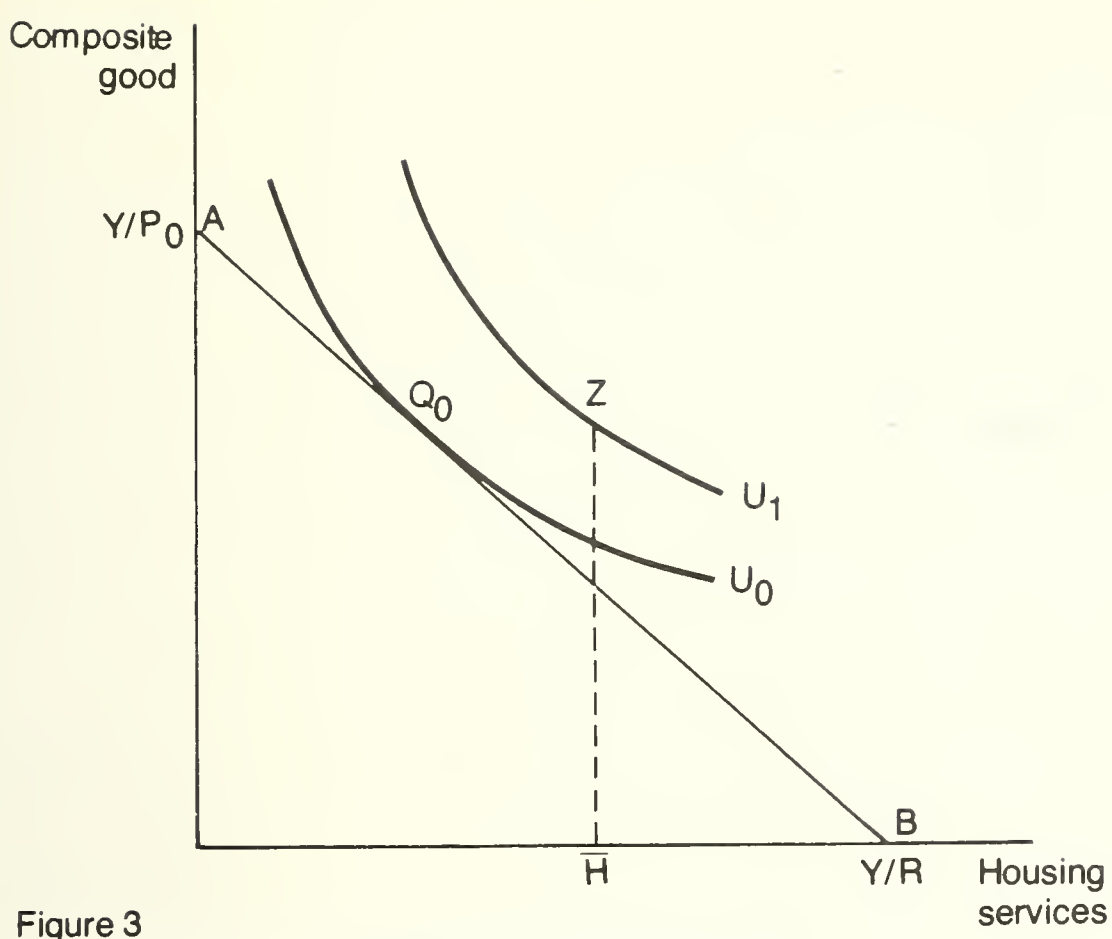
Figure 3
Household choice with the public housing program

R. The pairs of composite good and housing available to the household are represented as line AB in Figure 3.[3] Maximizing its utility in the absence of the public housing program the household might choose a position Q_0 yielding utility level U_0.

Participants in the public housing program are offered a specific quantity of housing services $\bar{H}$ at rental rate $\bar{R}$, which is below the market rent. A tenant is not allowed any choice about how much housing to consume (a bigger or smaller apartment) at the subsidized rent. The program adds one point Z to the household's choice set and permits the household to attain utility level U_1. The household can consume more housing and more of the composite good at Z, compared to the situation without the public housing program.[4] The rent/income scale establishes the rent which must be paid, hence the implicit reduced

3 The household is assumed to have no savings and to rent rather than purchase housing stock. If the mortgage rate of interest is equal to the financial rate of interest, these assumptions are unnecessary and the choices available as homeowner and renter are identical (see chapter 3).

4 The point Z has been chosen to be above the indifference curve U_0 to show that the household is better off under the program and would choose to participate. The point also shows that more housing is consumed than at Q_0, although clearly there is no necessity that this be true.

rental rate $\bar{R}$, and therefore the quantity of the composite good obtainable $(Y-\bar{R}\bar{H})/P_0$.

The benefits accruing to public housing tenants are measured in two ways. The first is the difference between the market value of the housing obtained under the program $R\bar{H}$ and actual rent paid $\bar{R}\bar{H}$, the measure used by Smolensky and Gomery (1973) and Aaron (1972). Graphically, this measure is the vertical distance between line AB and a line parallel to AB through Z (assuming $P_0 = 1$).

The second is the consumer's surplus measure — the income transfer that would leave the household as well off if the program were halted — the measure used by Murray (1975) and Barton and Olsen (1976). As seen above, if the household has a Cobb-Douglas utility function the income transfer T may be easily solved:

$$T = \left[R\bar{H}/b \right]^{b} \left[(Y-\bar{R}\bar{H})/(1-b) \right]^{1-b} - Y. \tag{6}$$

The measure is the vertical distance between line AB and a line parallel to AB tangent to the indifference curve through Z $(P_0 = 1)$.

The difference between the two measures of benefit will evidently depend on the shape of the indifference curves and the details of the program. The measures can be equivalent if by chance the line parallel to AB through Z is tangent to U_1. The consumer's surplus measure will always be less than or equal to the market value measure.

Calculation of these measures requires knowledge of the tenant's income, the actual rent paid, the tenant's utility function, and the market value of the unit. How each type of information was acquired will be described in turn. Unfortunately accessible records do not exist for individual tenants. Often income data are not systematically updated after a household enters public housing; much of the information remains only on the records of local housing authorities and is never collected in a central place. One large survey published average data for public housing projects rather than individual tenants (Ontario, 1970), and the analysis had to be conducted on this basis. This source provided data on average income, age of the household head, and average rent paid. The survey excluded senior citizens' public housing managed by the Metropolitan Toronto Housing Corporation Ltd, but similar data for these projects were obtained from Metropolitan Toronto (1970). The numerous adjustments which had to be made to these data are outlined in appendix E.

Various approaches have been used to estimate the household utility function. Murray (1975) estimated the parameters of a generalized CES function, while Barton and Olsen (1976) estimated a displaced Cobb-Douglas function for

numerous types of tenants. These approaches, though preferable, were impossible because of the lack of information. Instead it was assumed that the utility function was a simple Cobb-Douglas. The exponent b of the function, the fraction of income spent on housing, was assumed to be the fraction of expenditure devoted to rent by households 'similar' to those in public housing as recorded in the Survey of Urban Family Expenditure (Canada, 1972a). 'Similar' households were deemed to be those of the same income. A separate exponent was used for each income class (see appendix E).

Estimates of the market value of a public housing unit have all been rather crude. The only real solution would be to place a number of units on the market and ascertain the rents they could command, but this has never been done. An alternative approach which attempts to make inferences from rents in the private market for comparable accommodation is problematic because there is little comparable private housing inhabited by people like those in public housing households. Most US studies (such as Aaron, 1972; Muth, 1973) simply assume that public housing rents are 20 per cent lower because under the US program local housing authorities may charge rents 20 per cent below market rents 'for the lowest cost standard housing in substantial supply' (Aaron, 1972, 123). Barton and Olsen (1976), in a considerable advance, used a hedonic pricing technique. The best that could be managed here was to assume that the housing rented by households of slightly higher incomes ($4000 - $10,000) than households in public housing (0 - $8000) was 'comparable.' The market rent (actual rent payments) of comparable housing was found using Canada (1972b) for apartments of one, two, and three or more bedrooms by three city size classes (see appendix E). The average market rent of a public housing project in a given city was calculated as an average of these market rents for that size of city, weighted by the size of the dwelling units in the project. Staranczak (1977) used a hedonic pricing technique to estimate the market rents of public housing projects in Ontario in 1972. Deflating his estimates by 5 per cent to make them comparable to those used here reveals that his estimates are somewhat higher, but the increases in rent for city size and number of bedrooms are roughly comparable.

Distribution of the benefits

In 1970, the year examined in this analysis, there were approximately forty thousand public housing units in Ontario, of which about three-quarters were for families and the remainder for senior citizens. About 70 per cent of the families had earnings from work as their principal source of income, most of the remainder depended on social assistance; seniors relied mainly on the old age pension. The typical head of a family was male and married, a situation that has

since changed because many more female-headed, single-parent families are now in public housing. The typical senior citizen tenant was a widow (Ontario, 1970).

The distribution by income class of the average benefit per household is presented in Table 10. The benefits are expressed as the change in income of a household if the public housing program were replaced by a neutral program (benefiting each participant in proportion to income) of equal cost to the government.[5]

If public housing were replaced by a neutral alternative, the lower-income tenants would be made worse off and higher-income tenants better off using the market value measure of benefits. The ratio of the differential benefits to income rises with income, so that the public housing program clearly has a progressive pattern of benefits. The consumer's surplus measure of benefits shows a roughly similar distribution. In every case, though, the differential benefits using a consumer's surplus measure are larger, indicating that tenants place a lower value on the subsidy than the market value measure. The consumer's surplus benefits are about 55 per cent higher. This inefficiency of the subsidy is greatest at the lower income levels.

Among the participants in public housing the pattern of benefits seems to satisfy the criterion of vertical equity. There is, however, a significant problem of horizontal inequity: many households eligible on grounds of income are denied entrance to the program. This inequity is largest at the lower income levels, as the percentage of eligible households participating rises over the first three income classes. This could be seen as a form of vertical inequity as well, because the probability of participating in the program rises with income.

The distribution of benefits by age is presented in Table 11. The results using either measure show that public housing offers benefits which rise with age, compared to a neutral alternative and the ratio of benefits to income rises with age. Public housing offers units to both families and senior citizens, and because the senior citizens often have lower incomes their benefits will be greater. Horizontal equity remains a problem even among the elderly, with about 2.6 per cent of the population over 65 accommodated in public housing. The probability of participating in the program rises, then falls, then rises again, with age.

Public housing therefore performs rather well in distributing the benefits to those in greatest need – among those who participate in the program. Its

5 The cost to the government was assumed to be the difference between the market value of public housing and rents paid. This measure assumes that government is an efficient producer and manager of housing services. Staranczak (1977) found the government to be an efficient producer.

TABLE 10

Distribution by income class of benefits among participating tenants in public housing, Ontario 1970

		Average differential benefits ($)		Differential incidence		
Income ($)	Distribution of partici- pants (%)	Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	Participants as a percentage of the entire class
0 - 1,999	24	-520	-282	-0.301	-0.163	2.1
2,000 - 3,999	25	-172	-71	-0.056	-0.023	3.1
4,000 - 5,999	46	270	438	0.057	0.092	5.4
6,000 - 7,999	5	696	889	0.104	0.132	0.5
8,000+	–	–	–	–	–	–

TABLE 11

Distribution by age class of benefits among participating tenants in public housing, Ontario 1970

Age of household head	Distribution of partici- pants (%)	Average differential benefits ($)		Differential incidence		Participants as a percentage of the entire class
		Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	
0 - 24	0	–	–	–	–	0
25 - 35	17	344	484	0.073	0.102	1.2
36 - 44	45	225	380	0.048	0.081	3.4
45 - 54	4	–89	55	–0.022	0.013	0.3
55 - 65	1	–469	–302	–0.150	–0.097	–
66+	33	–473	–270	–0.251	–0.143	2.6

benefits are concentrated on its target group, with over 75 per cent of the households from the lower third of the income distribution. Against this must be offset the fact that many deserving households on the basis of income do not participate in the program, while others of greater income do.

Despite this relative success in meeting the vertical equity criterion, public housing is currently in disrepute. The dilemma is typical of the problem besetting most redistributive programs. In order that a program may efficiently reach the desired group, the beneficiaries must be clearly identified and often spatially concentrated, and detailed controls must be implemented on the form of assistance. Yet this identification creates a stigma for the beneficiaries, and the controls create a bureaucratic apparatus. At present most analysts seem to believe that the costs of the stigma outweigh the benefits of efficiency.

ENTREPRENEURIAL AND NON-PROFIT HOUSING

The programs

The entrepreneurial (limited-dividend) housing program and the non-profit program are considered together for a number of reasons, not the least of which is that the single available source of information pooled the two programs. Both programs offer assistance in the same fashion and are intended to achieve roughly the same things, the non-profit program in a sense having evolved out of the experience of the entrepreneurial program. Activities under the programs in Ontario are outlined in Table 12.

The entrepreneurial program is designed to increase the supply of moderately priced rental housing in the private market and to ensure that this housing rents at less than market rates (Ontario, 1975a). Loans for 95 per cent of the capital cost of a project at below-market interest rates are available to corporations, organizations, or individuals, and in return the owner must agree to controlled rents which can be changed only with the consent of CMHC. The owner may opt out after fifteen years if the loan is repaid. The favourable interest rate and controlled rents are designed so that the entrepreneur receives a satisfactory return but the main benefits are passed on to tenants in the form of lower rent.

The entrepreneurial program was known when it began as the limited-dividend program because the terms of the loan contained an explicit limit on the returns or dividends which the owner could earn. In 1967 the restriction on the rate of return was removed. The restriction of course is redundant, because by establishing rents and the terms of the loan CMHC can control the entrepreneur's rate of return.

This housing was planned for those with incomes ranging from the middle of the lower third to the average income, forming a stratum between those who live

TABLE 12

Entrepreneurial and non-profit activity, Ontario 1966-76

	Entrepreneurial				Non-profit			
Year	Units	Loans ($000)	Loan per unit ($000)	Percentage of all housing starts in Ontario	Units	Loans ($000)	Loan per unit ($000)	Percentage of all housing starts in Ontario
1966	n.a.	n.a.			748	5,291	7.1	1
1967	n.a.	n.a.			1,364	8,102	5.9	2
1968	403	5,102	12.7	1	872	5,358	6.1	1
1969	1,221	14,826	12.1	1	594	5,067	8.5	1
1970	9,923	125,191	12.6	13	496	3,804	7.7	1
1971	3,558	49,630	14.0	4	588	5,447	9.3	1
1972	3,274	44,109	13.5	3	954	6,672	7.0	1
1973	2,496	37,427	15.0	2	239	2,868	12.0	—
1974	1,105	20,167	18.3	1	3,663	51,010	13.9	4
1975	3,850	96,383	25.0	5	2,602	43,432	16.7	3
1976	—	—	—	—	3,804	74,599	19.6	4

SOURCE: CMHC (various years)

in public housing and those who purchase housing unassisted in the private market. In projects built before 1968 the maximum income to enter was $6500, and if one's income rose above $8500 one was obliged to leave. Since then the limits have varied from project to project depending on the construction cost. Both entry and exit restrictions have never been strictly enforced and have been waived frequently to reduce vacancy rates.

The program has been used very unevenly over the years (Table 2), in part because of government policy and in part because alternative more attractive investment opportunities are sometimes available to entrepreneurs. In 1976 it was superseded by the Assisted Rental Program, providing assistance for the construction of moderate rental housing with no control on the incomes of tenants.

The non-profit program emerged as a response to problems with the entrepreneurial program. It was felt that non-profit groups would be better operators of assisted housing than private entrepreneurs, and in the 1970s non-profit housing expanded as the entrepreneurial program wound down. Under the non-profit program both private and municipally owned non-profit groups may obtain loans for 100 per cent of the building's cost and also a grant of up to 10 per cent which must be used to reduce the loan. Sponsors of a non-profit project may receive startup funds to a maximum of $10,000 to ensure that the group is able to reach the point of a properly prepared loan application. Rents are controlled and may only be altered with the permission of CMHC, but there are no restrictions on the incomes of tenants.

Originally, non-profit housing was built primarily for the elderly through the initiatives of service clubs and church groups. More recently the participating groups have broadened to include native peoples' organizations, YMCAs, municipal housing agencies, and neighbourhood self-help groups. These groups have built for unattached single persons and even for families. The intent seems to be to encourage these groups as a mechanism to provide assisted housing outside the public sector. While their growth has been significant, 2955 units being funded in Ontario in 1976, it is too early as yet to ascertain whether they will be a major permanent force.

Measuring the benefits

As with public housing, the effect of the initiation of the programs on private market rents and housing prices is unlikely to be large. Rents will decline somewhat as program participants leave the private market for the new housing in the controlled sector. The decline is mitigated to the extent that existing housing is used under the program, or existing housing has to be demolished, or private market starts are reduced by increased government borrowings to finance
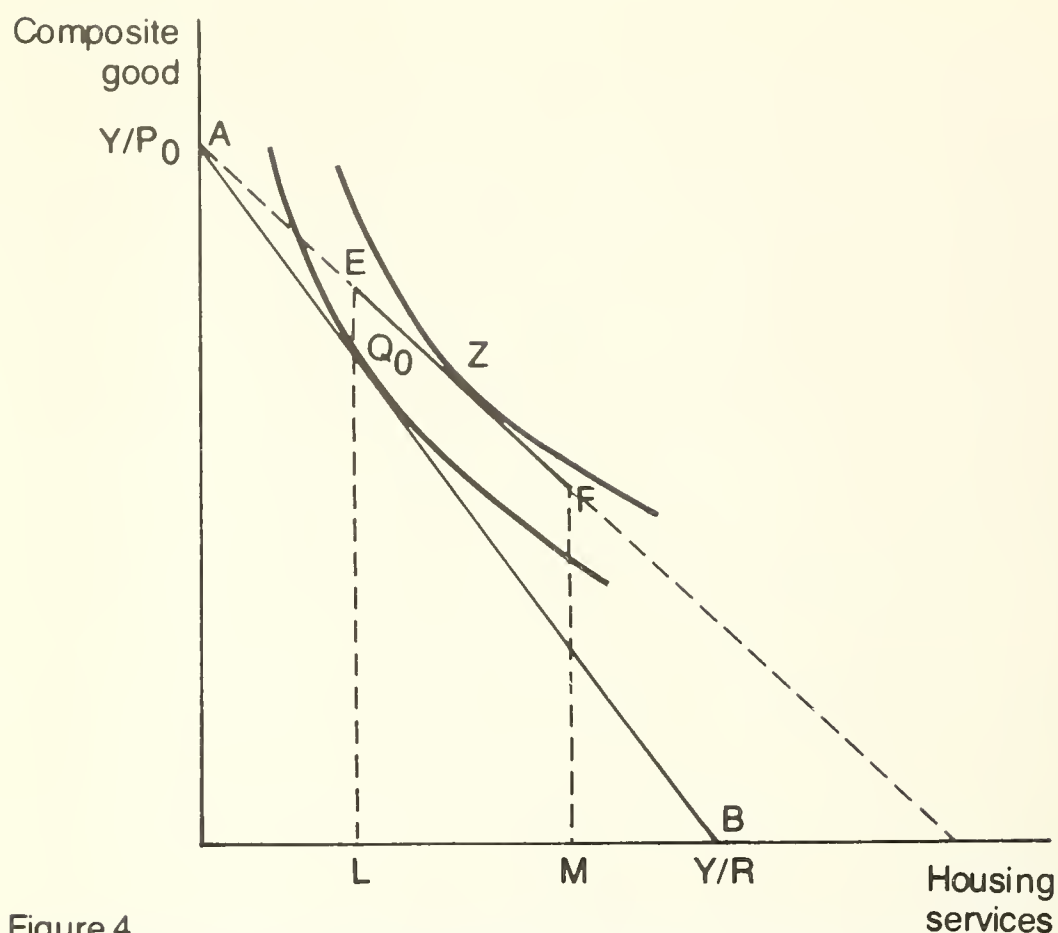
Composite good

Y/P_0

Figure 4
Household choice with the entrepreneurial or non-profit program

A

E

Q_0

Z

F

B

L

M

Y/R

Housing services

the program. These effects, of course, need not be considered in the differential incidence approach adopted here.

The tenant benefits are again measured by a market value measure (the difference between the market value of the housing and actual rents) and by a consumer's surplus measure (the income transfer which would leave the household as well off if the program were removed). There have been few studies in the literature on this type of program. Aaron (1972) presents estimates for the United States using the methodology used by von Furstenburg and Moskof (1967), in which the discounted stream of benefits over the life of a project were assigned to tenants of buildings constructed in that year. Here the annual benefits to all tenants in previously and newly constructed buildings are estimated.

The change in the bundles of housing and other goods available to a household participating in the program may be represented as in Figure 4. The household is offered rental housing at less than the market rental rate. The household has some choice, unlike under the public housing program, in being able to select any of the apartments available from the entrepreneur or the non-profit groups without restrictions due to family size or income (provided that the family is of the eligible group). The bundles offered the household may be represented as a line segment *EF*, less steeply sloped and lying outside the

original renters' budget line *AB*. The program is therefore equivalent to a reduction in the price of housing, although only certain quantities of housing, between *L* and *M*, are available at the reduced price. The household would move from its original choice Q_0 to a new point *Z*.

It is evident from an examination of Figure 4 that households with certain utility functions, particularly functions which meant either a great deal or very little housing was purchased without the program, may not gain from participating in the program. Participation of any household constitutes evidence that they have enjoyed a gain in utility.

The algebraic measures and geometric representations of the two measures of benefit are analogous to the public housing case; as before their measurement requires knowledge of the income of the tenant, the actual rent paid, the utility function, and the market value of the housing.

There proved to be scant information on the households residing in housing built under the two programs. Neither CMHC nor the province keeps a systematic record of the incomes or other characteristics of the tenants. It was intended that CMHC specify in its operating agreement with the entrepreneur the maximum income permissible for a household when first renting a unit and the income at which the household would have to leave. These ranges, however, have been only rough guidelines and have not been strictly enforced. An income check is required only every three years, and CMHC does not require submission of these incomes for audit. If a building had vacancies, CMHC frequently eased or even waived the income ceilings (Dennis and Fish, 1972, 238). There have never been procedures for regularly recording the characteristics of tenants in non-profit housing.

Periodic surveys of tenant incomes have been made, and one such is reported in CMHC (1972a, Table 100), on which the following benefit estimates are based. The total number of entrepreneurial and non-profit units in Ontario, the average rent paid, and the distribution of the incomes of households in the units were published. The income of the 'average' household in each income class was assumed to be the mid-point of the income range of that class, except the lowest class, whose average was assumed to be $3500, and the top class, whose average was $8500. The actual rent was assumed to be the same for each income class because rents do not change with the income of the tenant. The parameter of the utility function was computed for each income class as the ratio of actual annual rent to income.

Again, no data on the market value of the housing were available, so an indirect method of estimating the market value had to be used. Assuming that entrepreneurs face the same cost curves if they build privately or under the

program and that CMHC sets rents and loan terms such that the builder's rate of return is similar with or without the program, the difference between market rent and rents actually paid can be shown to be as follows:

$$\bar{R} - R = (\bar{M} - M) \left[[1 - (1+r)^{-30}] / [1 - (1+r)^{-50}] \right], \tag{7}$$

where $\bar{R}$ and R are market and actual annual rental payments, $\bar{M}$ and M are market and actual annual mortgage payments, r is the discount rate, and the mortgage is amortized over thirty years on a building with a life of fifty years (see appendix E). Using the actual mortgage rate and the government entrepreneurial borrowing rate, the annual difference between market and actual rents was calculated to be $173.

This calculated difference is subject to a number of possible biases. The entrepreneur may be less efficient when building under a government program, because the cost of such inefficiency is borne by CMHC not himself, assuming rents are set to guarantee a certain rate of return. This would mean an upward bias in the difference. The loan terms may be more attractive than simply a reduced interest rate. Frequently the loans are of higher ratios to the cost of a building (an entrepreneur's equity is less) and of longer term than those available in the private market. If CMHC sets rents to guarantee a market rate of return to the entrepreneur, the calculated difference is downwardly biased. Finally, if CMHC permits rents which yield a slightly lower rate of return to the entrepreneur, the difference is downwardly biased. On balance it seems likely that the difference is biased downwards slightly.

It should always be remembered that the difference between market and actual rents is a direct form of subsidy, despite the fact that there are no explicit government expenditures (except administration costs). The loans are made at rates which correspond roughly to the rates at which the government borrows the funds. Some analysts suggest that there is no subsidy when there are no expenditures. This thinking is implicit in Dennis and Fish (1972), where a distinction is drawn between public housing and entrepreneurial housing, the latter being called 'full recovery housing.' Perhaps it is helpful, following Shoup (1969, 53), to think of a loan at less than market rates as an item on government accounts of imputed expenditure and offsetting revenue equal to the difference between the market and actual interest on the loan.

Using the differential incidence approach required that the benefits be compared with a hypothetical alternative program of similar effect on the government sector. The hypothetical program is assumed to be one of loans to the households at an interest rate similar to that offered to the entrepreneur or

non-profit group. The household could then reinvest the loan funds in the private market, which would net all households in total an annual increase in income equal to the total market value measured benefits. The loans offered each household would be the same proportion of their income, and the total loans offered would be the same as with the existing programs.

Distribution of the benefits

The available survey permitted distribution of the benefits by income class (Table 13) but not by age class. If these programs were replaced by a neutral program of equal cost and the market value measure of benefits used, lower-income participants would suffer a loss in income and higher-income participants a gain. The differential incidence shows that the changes rise as a ratio of income. That the programs are progressive compared to the alternative is not surprising because the tenants' benefits do not change with income. If a household is eligible, the rent on a dwelling unit is the same regardless of income. The probability that a household will participate in the program rises, then falls, with income.

The consumer's surplus measure of benefits, which takes account of the preferences of the tenant, reveals a very different result: the programs are neutral rather than progressive. The self-evaluation of the subsidy is lower for all households, but especially for those with lower incomes. The restricted form of assistance, being limited to housing rather than available for all goods, is most problematic for them. This inefficiency is relatively larger for these programs than for public housing.

Depending on how the subsidy is viewed, these programs, which contain no explicit income controls or change in the nature of subsidy depending on income, still manage to conform to the standard of vertical equity — or at least they do not radically conflict with it. However, the problem of horizontal equity remains, as with public housing; only a small fraction of each income class enjoys the benefits of the program. This fact also means that the criterion of vertical equity is only satisfied among those in the program. There remain many low-income families with no assistance, while others with far more resources enjoy substantial assistance. Furthermore, the probability of participating in the program at first rises with income.

The entrepreneurial program has now been curtailed and the non-profit program expanded considerably, but it is likely that the distribution of benefits is roughly the same.

The 1970 survey of these two programs showed that the benefiting households were of the target group, about 45 per cent from the upper end of the lower third and more than 90 per cent from the lower half of the

TABLE 13

Distribution by income class of benefits among participating tenants in entrepreneurial and non-profit housing, Ontario 1970

| Income ($) | Distribution of partici- pants (%) | Average differential benefits ($) | | Differential incidence | | Participants as a percentage of the entire class |
		Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	
0 - 3,999	15.5	−69	35	−0.020	0.010	0.7
4,000 - 5,999	38.3	−23	68	−0.005	0.014	3.8
6,000 - 7,999	40.2	37	69	0.005	0.010	3.5
8,000+	6.0	82	89	0.010	0.010	n.a.

distribution. Combined with public housing, these rental programs conform to 'the organization chart on the wall of the central office of a policy planning group.' Public housing is replaced by entrepreneurial and non-profit housing as income rises. It is impossible to compare average tenant benefits as income increases under the programs, but one can estimate the benefits of a marginal program change in each. The benefit to a public housing tenant with an income of less than $2000 is about $750 annually, falling to $572, then $347, and finally $176 at successively higher income classes. The entrepreneurial housing benefits were about $173 annually to all income classes.

Taken together, these rental programs, which form the core of the housing assistance to low-income households, make a generally consistent package although there is serious horizontal inequity. However, in the broader scope of all housing policy including ownership programs and income tax provisions, this consistency breaks down. An examination of the latter areas is the subject of the next two chapters.

A FURTHER TOPIC: RENT CONTROLS

Rent controls in Ontario differ from the rental programs examined in that they operate as a regulatory process rather than through spending or lending public funds. Nevertheless they are quite similar in intent: controls attempt to redistribute income to renters by regulating rents. A full examination of rent controls would demand a considerably different analytic framework than that adopted here.

Rent controls, or more precisely Rent Review, were begun in Ontario with the passage of The Residential Premises Rent Review Act on 18 December 1975. Controls were retroactive to August 1975, recently were extended to 30 June 1979, and under the proposed Residential Tenancies Act would continue until the end of 1980.

Under Rent Review a landlord is permitted one increase in rent per twelve-month period for each rental unit. If the increase in rent is less than the guideline of 6 per cent (8 per cent until 27 October 1977), the landlord need not apply for Rent Review. If the increase is above the guideline, application must be made. A tenant may apply for Rent Review of any increase whether it is above or below the guideline. After application has been made, a Rent Review Officer holds a hearing to consider the rent increase. Rent increases are permitted which pass on any increases in operating costs or capital expenditures that the landlord had experienced or will experience over the following year. Increases are also permitted in excess of cost increases if the landlord is suffering

a loss on the operation of the unit.[6] Publicly assisted housing units and new buildings are exempt from Rent Review; and major renovations to existing units are permitted a rate of return equal to the mortgage rate of interest.

The intention seems to be to slow the rate of increase in rents due to increases in demand, but to permit increases due to increases in operating costs (increases in the price of land or in the costs of construction are not passed on). The aim does not seem to be to influence the long-run equilibrium rent because new buildings are exempt, though that conclusion assumes that the decision to construct new rental units is unaffected by the existence of Rent Review.

Traditionally, economists have analysed rent controls as a ceiling on the price of rental housing below the equilibrium price. Implicitly assuming that each dwelling unit cannot vary in quality and hence always yields the same quantity of housing services, it was concluded rent control leads to gains for renters, losses for landlords, and a reduction in the quantity of rental housing supplied. A recent careful analysis by Frankena (1975) points out a number of weaknesses in that analysis. He adopts the more realistic assumption used here that the quantity of housing services from a dwelling unit can vary. He shows that a realistic form of rent control seen as a constraint on the rental payment per dwelling unit (not a constraint on the price per unit of housing services) will lead to reductions in the quantity of rental housing supplied, an increase in the price per unit of housing service, and perhaps even profits for existing landlords.

Clearly the traditional analysis will not suffice to explain the redistribution which follows the imposition of rent control. What is required is a careful examination of the Rent Review regulations and the development of a model to represent their influence. Rent Review in Ontario does not correspond precisely to the case examined by Frankena (1975); it is not a constraint on the rent payment per dwelling unit (because of the cost pass-through provisions).

Although a full study cannot be undertaken here, a crude approximation to the sorts of redistribution occurring in the short run under Rent Review can be offered. The model implicit in these calculations corresponds roughly to the traditional model. The results are presented in Table 14. It was assumed that rent control reduced the price per unit of housing service (and rental payments) by 2 per cent. Column (1) shows the average rental saving per renting household; column (2) shows the ratio of average rental saving to average income of renting families. The benefits of rent control are clearly progressive among renters. The reduced rent payments are assumed to impose losses on landlords. There were no data on income from rents or from real estate corporations, so it was assumed

6 Ontario (1977h). This description is extremely summary. For more detail on the allowable costs see Ontario (1977g).

TABLE 14

Approximate redistribution of a rent control program using Ontario 1971 data

	Renters		Investors			All households
Income ($)	Average rent reduction ($) (1)	Rent reduction to income ratio (2)	Percentage of households with investment income (3)	Average investment income loss ($) (4)	Investment loss to income ratio (5)	Net benefit (loss) to income ratio (6)
0 - 2,000	26	0.022	26	−8	−0.006	0.007
2,000 - 3,999	27	0.009	39	−20	−0.006	0.001
4,000 - 5,999	28	0.006	41	−22	−0.004	0.001
6,000 - 7,999	31	0.004	41	−19	−0.003	0.0
8,000 - 9,999	33	0.004	45	−17	−0.002	0.001
10,000 - 11,999	33	0.003	46	−13	−0.001	0.0
12,000 - 14,999	37	0.003	58	−15	−0.001	0.0
15,000 - 24,999	39	0.002	66	−25	−0.001	−0.001
25,000+	48	0.002	78	−97	−0.003	−0.002

NOTE: Computations based on Canada (1972c)

that losses were distributed according to investment income. Column (4) shows the average income loss per household with investment income, and column (5) shows the ratio of average loss to average income of households with investment income.[7] Among investors the pattern of losses is at first regressive and then proportional. Column (6) shows the net effects as the ratio of net benefit (loss) per income class to average income of all households. On balance, rent control is proportional over the middle-income range and progressive at the upper and lower ends.

On grounds of vertical equity, rent control seems to conform to commonly held standards. However, the horizontal inequities are more frequently the source of criticism; within an income class renters benefit while owners do not; investors in rental real estate lose while other households do not.

These results should only be considered a rough approximation of the short-run effects of rent control rather than an analysis of the situation in Ontario. Conclusions regarding the redistribution following Rent Review await a more complete examination.

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7 A more complete analysis would recognize that some of the income losses of investors would be spread across all households through reductions in personal or corporate income tax collections.

5
Homeownership programs

That the majority of households should be homeowners and that young children ought to be raised in single detached homes are values which have always been widely held in Canada. Most families aspire to homeownership, and politicians and opinion leaders think this is a good thing. A nation of homeowners is a stable, respectable, 'thoroughly Canadian' nation. Housing policy in Canada and in Ontario has always accepted those values and indeed has probably done much to encourage and entrench them. There have always been numerous programs to assist homeownership.

In the early period of Canadian policy from the second world war until the mid-1960s the major part of government housing activity was devoted to encouraging the construction of single-family homes for ownership. The approach adopted sought to increase the efficiency of the private market and to offer low levels of assistance through mortgage lending but not to offer direct cash subsidies to households. The major programs of the period, the federal loan insurance and residual lending schemes, were both intended to increase the supply of mortgage funds to finance new construction. Although every dollar of insured or residual loan cannot be considered to have resulted in a new dollar's worth of construction, on balance the programs stimulated a considerable volume of new construction of single detached houses. Through control of the lending terms, especially the maximum loan per dwelling, CMHC has been able to ensure that most of the loans financed moderately priced houses purchased by middle-income people. The residual lending program is not extensively used at present, but the insurance program, together with initiatives to increase the liquidity of mortgages, remains a cornerstone of Canadian policy.

After the mid-1960s housing policy became more and more explicitly concerned with social policy and the redistribution of income. Initially the new emphasis could be seen in rental programs for low-income households, but as

house prices rose faster than incomes in the late 1960s and early 1970s the emphasis shifted to ownership programs for middle-income households. Some of these new programs revealed a significant change in housing policy. No longer was the approach simply to assist the private market; now there were direct subsidies to households purchasing housing. The provincial Home Ownership Made Easy (HOME) plan was the first of these new programs, followed several years later by the federal Assisted Home Ownership Program (AHOP). Numerous other programs were mounted clearly designed to improve the functioning of the private market – grants to municipalities approving moderately priced housing, grants for housing studies, loans for sewage and water treatment facilities, and administrative reforms to reduce delays in the development approval process – but the shift in policy towards redistributing income was still significant.

In the late 1970s the homeownership programs were revised again, in the opposite direction. The HOME plan has been terminated. The federal government has announced that a new sort of mortgage instrument, a graduated-payment mortgage designed to redress the problems of fixed-payment mortgages in times of inflation, can be insured under the NHA. AHOP no longer offers cash assistance but provides only a payment reduction loan; the result is that AHOP is now like a graduated-payment mortgage. The residual lending program is not being used to finance an increased supply of housing for ownership. There seems to be a return to the strategy of improving the operation of the private market.

In this chapter three of the most important existing homeownership programs, residual lending, HOME, and AHOP, will be analysed to measure the benefits to participating homeowners. In each case the program will be described, a technique for measuring the benefits developed, and the distribution of benefits by income and age presented. These programs remain important not only because substantial numbers of people currently benefit from them and will continue to do so but also because any new programs may closely resemble them.

RESIDUAL LENDING

The program
The residual lending program, one of the largest housing programs operating in Ontario until the late 1960s, provides public funds for mortgage loans when private funds are unavailable. A potential builder can prove the unavailability of private credit with two loan applications rejected by private lenders. The public loans are on more generous terms than private ones, with lower interest rates and higher loan/value ratios. Some of these loans can be justified as loans to regions

or homeowners that are sound credit risks but for some reason not serviced by the private market. The bulk of the loans, however, go beyond an attempt to improve the efficiency of the market. They seek to allocate more resources to the housing sector than would an efficient private market. The loans are made both for rental and ownership, but the vast majority are for ownership (well over 80 per cent) and only they will be considered here.

Since it was established in 1946 Central Mortgage and Housing Corporation has had the authority to make direct loans when private credit is not forthcoming. This authority was scarcely used until 1957, when almost $200 million in loans were approved. After that time the program was heavily, although unevenly, used until 1973 when the AHOP program was begun; thereafter residual loans have been rarely made and confined to situations where the market has failed to provide to good credit risks (Tables 1, 2, and 3). Activities under the program in Ontario are more fully documented in Table 15.

The uneven use of the program, particularly its expansion in 1958 and 1959 and from 1964 to 1967, suggests that the primary purpose may not have been income redistribution but rather stabilization of the business cycle and residential construction cycles. The fact that the housing program could be expanded and contracted easily made it a convenient tool for stabilization. Nevertheless, the housing produced was principally moderately priced single detached housing of direct benefit to middle-income people, rather than rental housing, so that the redistributive intent remained of importance. From 1957 to 1970 the program was by far the largest housing program operating in Canada, measured by the commitment of public loans. In Ontario it was the largest until 1968, when it was surpassed by public housing. In the most active years over 10 per cent of all Ontario housing starts were financed under the program.

Although the loans were made on more generous terms than private loans, the program was never seen by the housing bureaucracy as a 'true subsidy' because there were no explicit government expenditures. The loans were always made at the NHA borrowing rate. In this light the program fell neatly into place on the 'organization chart,' as an aid to those in the middle third of the income distribution. On several occasions it was suggested that the federal government provide more extensive ownership assistance, to allow the participation of lower-income households, either by offering 100 per cent mortgages, so that no down payment would be required on the purchase of a house, or by offering mortgage loans at much reduced interest rates (Dennis and Fish, 1972, 268). These suggestions were resisted by CMHC, but the demands for increased homeownership assistance grew as housing prices began to rise more rapidly than incomes in the late 1960s. Then middle-income people began to have trouble purchasing their first homes and sought government help.

TABLE 15

Residual lending for single housing, Ontario 1964-77

	Units	Loans ($000)	Loan per unit ($000)	Percentage of all housing starts in Ontario
1964	6,130	85,420	13.9	9.5
1965	5,955	90,222	15.2	8.9
1966	7,436	121,890	16.4	14.2
1967	8,182	131,211	16.0	12.0
1968	3,143	46,207	14.7	3.9
1969	1,982	28,850	14.6	2.4
1970	1,282	17,862	13.9	1.6
1971	906	12,759	14.1	1.0
1972	611	8,731	14.3	1.0
1973	303	5,519	18.2	–
1974	291	5,793	19.9	–
1975	72	1,355	18.8	–
1976	77	1,584	20.6	–
1977	67	1,498	22.4	–

SOURCE: Correspondence with CMHC

In response to these pressures the federal government mounted the $200 million Special Innovative Program in 1970. Widely proclaimed at the time as a new approach to assisted homeownership, in fact it changed little, because the existing provisions of the National Housing Act were used. The ownership portion of the program really consisted of an extra commitment of federal loan funds for use in the residual lending program. The principal difference in the program was that the residual loans were targeted: they were to support housing projects that experimented with new planning ideas and housing technologies and to finance housing that could be purchased by families whose incomes ranged from $4000 to $6000. The form of assistance remained the same, but the supported projects now would be selected by certain criteria. A further $100 million special fund was earmarked in 1971 for residual lending homeownership loans targeted at families in the same income range.

The program showed considerable confusion in the thinking about assisted homeownership. Residual lending was to be used to pursue simultaneously a variety of goals. Clearly economic stabilization remained prominent, if downplayed. The program was to encourage housing innovation, yet the method of funding and the pressure to commit millions of dollars rapidly made it completely unsuited to such a task. Households with incomes between $4000 and $6000 were to be the beneficiaries, yet only in areas where housing costs

were very low could such families afford to purchase a house with the sort of assistance offered. This income range had never received assistance for ownership before, having been served by the public housing and entrepreneurial rental programs. These households were not caught by the rapidly rising house prices because they had never been able to buy houses. The targeting seemed to suggest that the program was really an attempt to substitute ownership assistance for public housing (or at least to have it augment public housing), but of course this was impossible under the terms of residual lending loans. Indeed the operation of the program made this obvious: over 48 per cent of the households had incomes of over $6000 in 1971, and in 1971 the limit had to be raised to $9000 (Dennis and Fish, 1972, 269).

The concern for homeownership issues remained strong, but it was clear that the residual lending program could provide neither the large direct assistance needed to offer low-income households an alternative to public housing nor the moderate direct assistance to middle-income households that was being demanded. A new vehicle was required. This was provided by the AHOP program contained in the 1973 NHA admendments, and thereafter residual lending was sharply curtailed. At present the residual lending program is seldom used, and if the current intentions of the federal government to reduce its direct lendings are realized, it will not likely be used in the near future. No doubt however it will eventually be used again for its familiar secondary purpose of stabilization.

Measuring the benefits
As with rental programs, the following analysis of the ownership programs is restricted to the benefits accruing to program participants. Non-homeowner benefits and any externalities are ignored. A differential incidence approach is adopted to allow omission of these and all macroeconomic effects, relative price changes, and problems of offsetting reductions in conventional mortgage lending. In comparing two programs of equal cost these effects are assumed to be the same under both programs.

The benefits are again measured in two ways, by market value and consumer's surplus. For the latter the familiar model of household choice had to be extended to deal with the choice of purchasing or renting housing, as discussed in chapter 3.

The household is assumed to have income Y and savings from past periods S. The household either purchases or rents housing and purchases a composite good. The savings may be invested in a financial asset which yields a rate of return m and may secure a mortgage at a similar interest rate m. The household can only purchase a certain maximum quantity of housing stock $H_{\overline{M}}$, a constraint forced upon it by the operation of the capital markets. The constraint

may arise for two reasons, either of which can be binding. The markets establish a maximum allowable loan/value ratio which establishes a constraint given the household's savings available for a down payment. The markets also establish a maximum allowable ratio of payments for principal, interest, and taxes to income, which sets a constraint based on the household's income.

The choices facing a household with and without the program are represented in Figure 5. In the absence of the program, the household as a renter faces budget line AB, as an owner a coincident line ACB. Most households participating in the ownership programs were previously renters and therefore probably chose a point such as Q_0, unable to buy a house because of the maximum constraint. With the lower interest rate and the higher loan/value mortgage available under the residual lending program, the household faces a lower price of housing and a higher maximum constraint $H_{\overline{M}}'$. The budget line becomes $ACFHB$, and the household chooses a point such as Z. The point Z frequently is not a point of tangency, although it is the highest achievable utility. Figure 5 shows all possible pairs along line segment CF as available to the household, whereas in fact the choice is much more limited because only two or three sizes of homes are available in any community.

The algebraic derivation of the two measures of benefit and the method of calculation used with the available data are contained in appendix F. Again, data were required on homeowner income, actual annual payments, the b parameter of the Cobb-Douglas utility function, and the market value (annual) of the housing. These data were obtained from a tape specially prepared by CMHC recording all residual loans for homeownership made in Ontario in 1971. There were 1286 usable observations on the tape.

The neutral alternative program against which the residual lending was compared was assumed to be a scheme which offered loans to these homeowners at the same generous terms in proportion to their income. These loans need not be used for housing but could be reinvested and are regarded by households as a cash transfer.

This stylized differential incidence approach neglects the interesting but analytically far less tractable question of identifying the benefits of a residual lending program compared to a world without it. In making the latter comparison it is obviously incorrect to presume that each dollar of residual lending results in a new dollar's worth of construction. The direct public loans may be substitutes for private lending; or the financing of the government program may reduce (or augment) conventional private lending; or some of the direct loans may be used to purchase existing houses. Smith (1974, 150) estimates that approximately 20 to 25 per cent of housing starts under residual lending are offset by reductions in conventionally financed starts. The residual
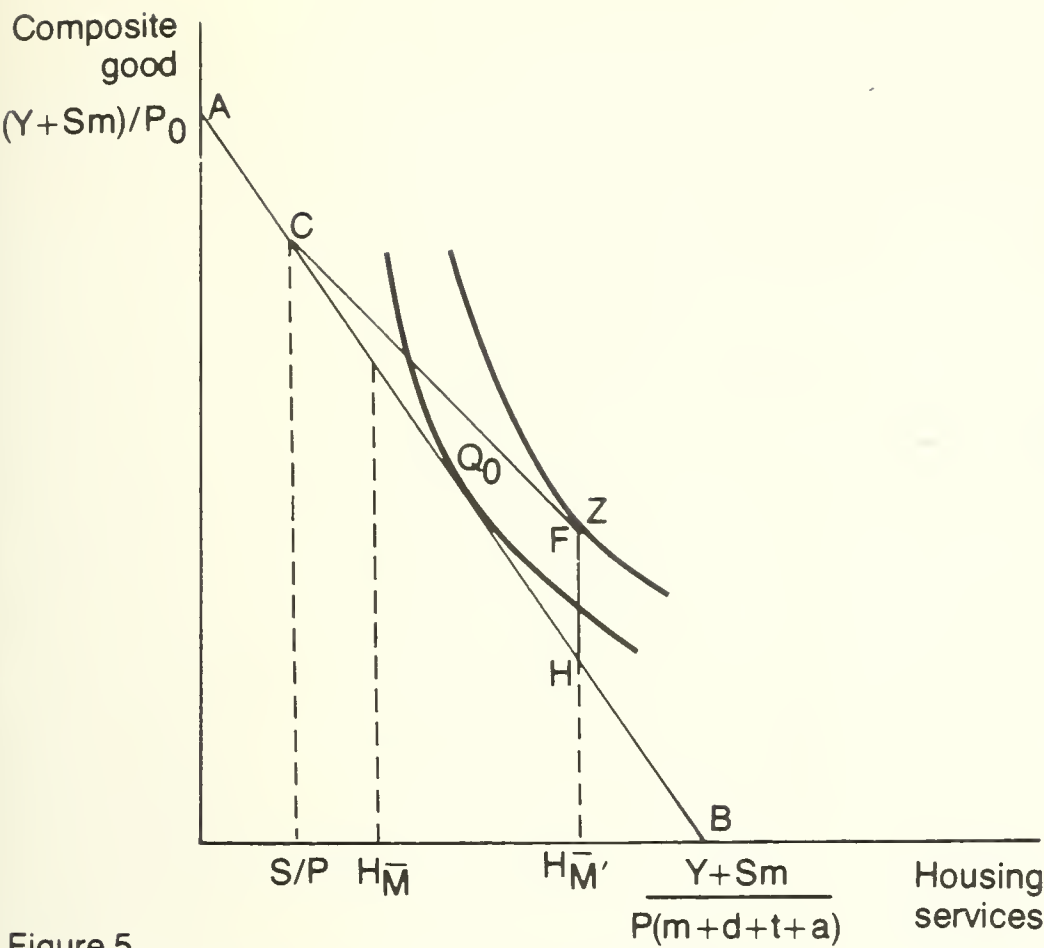
Figure 5
Household choice with the residual lending program

loans influence both the demand for housing through the generous loan terms and the supply of housing by increasing mortgage financing. A rough balance between these two forces was achieved because usually a mortgage loan was first advanced to a builder for the construction of a new house and then assumed by a household. Over all, the program likely reduced (or slowed the growth) of housing prices and rents and therefore influenced the incomes of many others besides program participants. Paradoxically, much of the effect may have been on rents because the new houses built were occupied by households that previously had been renters and were able to enter the ownership market only with assistance.

Distribution of the benefits
The distribution of the benefits to recipients of residual loans in 1971 by income and age are presented in Tables 16 and 17. The majority of the beneficiaries had annual incomes between $6000 and $10,000 and were under 35 years of age; the program reached young families in the middle third of the income distribution, as intended.

If the program were replaced by a neutral alternative, lower-income households would be slightly worse off and upper-income households slightly better off by the market value measure, and the incidence results indicate that residual lending had a slightly progressive pattern of benefits among the

TABLE 16

Distribution by income class of benefits among homeowners participating in the residual lending program, Ontario 1971

Income ($)	Distribution of partici- pants (%)	Average differential benefits ($)		Differential incidence		Participants as a percentage of the entire class
		Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	
0 - 1,999						
2,000 - 3,999						
4,000 - 5,999	7	-19	13	-0.004	0.002	1
6,000 - 7,999	38	-12	24	-0.002	0.003	8
8,000 - 9,999	35	1	37	0.0	0.004	8
10,000 - 11,999	12	16	53	0.001	0.005	3
12,000 - 14,999	6	33	86	0.002	0.006	1
15,000 - 24,999	2	62	95	0.004	0.006	1
25,000+	—					

TABLE 17

Distribution by age class of benefits among homeowners participating in the residual lending program, Ontario 1971

		Average differential benefits ($)		Differential incidence		
Age	Distribution of partici- pants (%)	Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	Participants as a percentage of the entire class
0 - 24	19	–3	31	0.0	0.004	5
25 - 35	53	0	38	0.0	0.004	8
36 - 44	17	3	41	0.0	0.005	3
45 - 54	8	2	39	0.0	0.005	1
55 - 65	3	–1	38	0.0	0.005	1
66+	–					

participants. The participation rates by income class also suggest that the vertical equity criterion has been satisfied: the participation rate falls with income. The consumer's surplus measure likewise suggests that the program was progressive, although less strongly so. The consumer's surplus measure also reveals that most households place a considerably lower value on the residual lending benefits than is indicated by the market value measure. The same results from the viewpoint of the household could be achieved at much lower cost if the program were replaced by a cash transfer.

The distribution of the benefits by age shows little difference between the residual lending program and a neutral alternative. The important age redistribution occurs not because the benefits differ by age among program participants but because most of the participants are young and the percentage of each age class which benefits falls with age.

These benefit calculations used data on households that entered housing financed under the residual lending program in 1971. Many other households continue to benefit under the program, having entered in previous years. In contrast the benefit calculations dealing with rental programs utilized data on all households. In calculating the percentage of each class participating in the residual lending program the total number of units built under the program was used, and it was assumed that the income distribution was the same as for those entering in 1971. These participation rates reveal that even a large program such as residual lending violates the principle of horizontal equity.

HOME OWNERSHIP MADE EASY

The program

In 1967, several years after the province had begun active participation in the public housing field, the HOME plan was initiated to assist households seeking to purchase a home. Annual activity under the plan is shown in Table 18. The program was specifically intended to assist middle-income families rather than all families up to and including those of middle income. Even with the assistance, low-income families could not afford the down payment or the carrying costs of a home.

Like most housing programs there have been numerous changes in the terms of assistance since the beginning. In this program the changes have been so numerous and complex as to seem almost the product of a satirist's imagination. A history of the program has even been written (Ontario, 1977d). Only the main changes can be sketched here.

Originally the HOME plan offered lots, which the province had assembled and usually serviced, for sale with a choice of financing plans, the most popular being a fifty-year lease with payments based on the NHA, Section 58, interest rate and

TABLE 18
HOME plan activity, lots disposed 1967-76

Year	Number of lots disposed	Year	Number of lots disposed
1967	603	1972	3785
1968	2197	1973	1650
1969	1455	1974	3910
1970	936	1975	3297
1971	2731	1976	3952

SOURCE: Ontario (1972) and Ontario (1976)

the government book value rather than market value of the land (book value included acquisition, development, and servicing costs). Homes built on the land could not sell above a given maximum price ($15,000 for a three-bedroom unit). There were no eligibility requirements, but because the house built on the leased land had to be privately financed the eligibility rules for private mortgage funds became the effective ones.

From the outset the plan faced the criticism which had been levelled against all suggested homeownership programs. Public opinion believed that it was somehow 'wrong' or 'unfair' to subsidize directly the acquisition of an asset such as a house. Such a program is of course analytically identical to a perpetual subsidy for the purchase of the services from an asset (as is the case in public housing), but this was not recognized. It was felt even more unfair if the subsidized asset appreciated in value so that homeowners could realize a capital gain on resale. Therefore, there were strict controls on the resale of HOME plan houses. The lot lease had to run at least five years, after which time the homeowners could purchase the land at its market value established at the commencement of the lease. During the five-year period all resales had to be approved by the Ontario Housing Corporation, and the permitted sale price could only include an increase of $500 a year. At the end of five years the owner could realize the full capital gain on the land and building. Predictably there was great public outcry about these capital gains as they were realized, and even as they accrued.

The public reaction seems irrational. Households enjoying the capital gain were eligible to participate in the program. Their misdemeanor was capitalizing the value of the subsidy (a process which reflects how others value the subsidy) and using the money as they saw fit, perhaps to buy housing elsewhere. Perhaps the public felt that the subsidy was provided on condition that it be spent on housing, a specific sort of housing, indeed a specific house. The preferences of

the recipients for other goods or other sorts of housing were not valued. Alternatively, the public may have become upset as the true value of the subsidy was made explicit; previously it had seemed small because no large expenditures were recorded in the public accounts. Either the public did not understand the value of the subsidy and wished the program altered when it became clear, or they recognized its value but had wished to disguise it because the recipients were not the poor but the middle class.

In June 1973 in response to a growing public outcry over the capital gains being made by HOME plan beneficiaries the regulations were changed so that after five years the leased land could be purchased at the current market value, not the value when the lease began. The resale provisions were retained. Also in 1973 the Ontario Mortgage Corporation began to provide mortgage funds at below-market rates to assist in the purchase of the house. Rules governing eligibility were instituted and became progressively more complex (Ontario, 1977d). In 1973 the maximum allowable income of a family with one earner was $14,500 and with two earners $17,000. The terms of the subsidy did not change with the income of the household.

In late 1975 the program was further revised in response to complaints that land prices were rising faster than leaseholders could save and that the participants did not enjoy all the benefits of 'owning their own home' because the land on which the house stood was leased. The revisions provided that the land could be purchased at its full market value and financed using a second mortgage provided by the province. The minimum required second mortgage payments were set to amortize only the government book value of the land, not its market value. The difference had to be paid either when the house was sold or at the termination of the thirty-five-year mortgage.

At the time of writing the HOME plan had been revised yet again, or perhaps more correctly terminated and a new program initiated using the same name. The province offered to piggyback assistance onto the existing federal AHOP program. If a family, after receiving the federal subsidy, still would have to pay more than 30 per cent of their income on mortgage payments and property taxes, the province would provide additional grants of up to $750 in the first year. In Toronto in 1976 a household with an income of $9520 was eligible to participate (Davies, 1978).

At the time of redrafting (June 1978) the HOME plan had been terminated altogether because AHOP was changed to remove the direct subsidy. There is now no direct homeownership assistance program to replace it in Ontario.

Measuring the benefits
The choices facing a household with and without the program can be seen from Figure 5 above. The alternatives without the program lie along *AB*. The

maximum quantity of housing the household may purchase $H_{\overline{M}}$ is established by either a savings or an income constraint. A more complete discussion of the model is available in chapter 3.

The HOME plan influenced available household choice in a number of ways. The data deal with HOME operations in 1974, and therefore the form of the program in that year will be discussed, though in all its various guises the effect was roughly the same. The land lease arrangements reduced the down payment required on a house and the annual carrying charges because the lease was written using government book value and at an attractive mortgage interest rate. The government mortgage also reduced the annual carrying charges. The effect of this program was to reduce the price of housing and to increase the purchasable maximum. The qualitative effect of the HOME plan on household choice was therefore identical to the residual lending program depicted in Figure 5, although the price fall was far greater in the HOME plan. Throughout all its various revisions, the HOME plan had the same sort of effect. This result could have been achieved in a much simpler fashion in each case by using a high-ratio mortgage at reduced interest rates. One cannot help wondering (and marvelling at) why such complex procedures are used to achieve a result that could be realized more simply.

Figure 5 shows all the points along line *CF* as available to the household, but in fact there was not nearly so much choice. The HOME plan set a maximum value of housing, and in many communities only a few sizes of homes were available under the program. If the household leased the lot directly and built its own home, a full range of choice of course was available.

The benefits may be measured as the difference between what the housing purchased would have cost (annually) at market prices and the actual payment or by using a consumer's surplus calculation. The geometric and algebraic measures of these benefits are sufficiently like those in previous sections that they need not be repeated here (see appendix F for the algebraic derivation). The same sort of data were used as in the residual lending analysis. The information was obtained from a sample of HOME purchasers in 1974, collected especially for this study; 390 households from ten different HOME plan projects were included in the sample, representing about 10 per cent of all HOME activity in 1974.

As before, a differential incidence approach was adopted which compared the HOME benefits with those of a program of equal cost to the government and providing assistance as a constant proportion of household income (see appendix F for the methods of calculation).

A direct analysis of the initiation of the HOME plan would probably show that it increased both the stock of housing and the demand and on balance had little effect on house prices and rents. Although it is difficult to substantiate, the HOME plan has been alleged to have also made available 'no frill' housing which was not being provided by the private market.

Distribution of benefits

The HOME plan represents the most glaring anomaly among the housing assistance programs. The benefits under the program were enormous. The average benefit to a household earning $7000 was about $1400 per year, while a public housing tenant of similar income received a benefit worth less than one-third this amount.[1] Not only were the benefits huge but they also accrued principally to middle- and even upper-income households. Almost 25 per cent of the beneficiaries came from the upper third of the income distribution.

The fact that the richest form of housing assistance was offered to middle- and upper-income families was in part due to problems with the program and in part clearly intended. The HOME plan was designed to assist middle-income families, particularly young families, and this was evidently achieved, because 75 per cent of the beneficiaries were from the middle third of the income distribution and under 35 years of age. The limits on entry to the program, however, were not strict enough to prevent many high-income households from participating as well.

The level of assistance offered under the program appeared to be quite low because there were few explicit government expenditures involved. In fact the assistance was high because the beneficiaries had to pay a lease on the book value of the land rather than the market value, which was on average $5000 more. This aspect alone of the assistance was equivalent to an annual cash subsidy of $550 in 1974. A political realist might argue that the value of the subsidy was fully recognized and the intent was that it flow to the middle class. While there may be some truth to this argument, it also seems likely that the value of the subsidy was not fully recognized.

The distribution of the benefits among the participants by income and age is presented in Tables 19 and 20. The market value measure suggests that compared to a neutral alternative program the HOME plan had a progressive pattern of benefits, a result which follows from the fact that the same level of benefits was offered to a household regardless of income. The consumer's surplus measure suggests a different conclusion; it indicates a slightly regressive pattern compared to the neutral alternative. The HOME plan as a large price reduction distorts consumer choice, a distortion greater for households with lower incomes, although still significant for all groups. The probability that a household would participate in the plan rises over most of the income range, indicating a vertical equity problem. The distribution of the benefits by age using either measure shows that the plan has little effect on the age distribution

1 These calculations examine the benefits to one household of a marginal change in the program (see chapters 3 and 7).

TABLE 19

Distribution by income class of benefits among homeowners participating in the Home Ownership Made Easy plan, Ontario 1974

| Income ($) | Average differential benefits ($) | | | Differential incidence | | Participants as a percentage of the entire class |
	Distribution of partici-pants (%)	Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	
0 - 1,999	–					
2,000 - 3,999	–					
4,000 - 5,999	–					–
6,000 - 7,999	1	–751	689	–0.102	0.093	0.5
8,000 - 9,999	8	–575	404	–0.062	0.043	1.5
10,000 - 11,999	25	–258	836	–0.023	0.075	1.8
12,000 - 14,999	43	41	689	0.003	0.052	0.5
15,000 - 24,999	23	436	1177	0.027	0.072	
25,000+	–					

TABLE 20

Distribution by age class of benefits among homeowners participating in the Home Ownership Made Easy plan, Ontario 1974

Age	Distribution of partici- pants (%)	Average differential benefits ($)		Differential incidence		Participants as a percentage of the entire class
		Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	
0 - 24	18	17	911	0.001	0.070	0.9
25 - 35	59	−71	902	−0.005	0.070	1.4
36 - 44	19	205	1075	0.015	0.078	0.6
45 - 54	3	−35	1027	−0.003	0.074	0.1
55 - 65	1	−199	714	−0.016	0.056	−
66+	−					

of income. Within the group of participants the program does not achieve the goal of being of greatest benefit to the young household. However, most of the participants are young, and the fraction of each age class participating falls with age.

ASSISTED HOME OWNERSHIP PROGRAM

The program
In a number of ways the Assisted Home Ownership Program of 1973 represented a significant shift in federal housing policy. For the first time a major program offered an ongoing cash subsidy directly to a household for the purchase of a house. Although the previous assistance under the residual lending program was equivalent to a cash subsidy, AHOP, in using tax revenues to provide the payment, showed a significant shift in political thinking about assisted homeownership. Public funds were being used to assist in the acquisition of an asset. The level of subsidy was also raised considerably. Moreover, the program extended assistance to a much higher income class. Unlike the confused attempts to use residual lending to assist lower-income families, this program was clearly to assist middle-income groups.

When direct cash subsidies were offered to the middle third of the income distribution the neat organization chart on the wall of the policy planning group was no longer applicable. It had broken down under pressure from the middle class faced with rising home prices. Activities under the program are shown in Table 21.

When the program was instituted in 1973 AHOP assistance was offered to moderate-income families with dependent children. Eligible families had to have an income below the maximum level established by CMHC, had to purchase a home whose selling price was below the maximum set by CMHC for each area, and for most of the time the program was in effect had to be first-time homeowners purchasing a newly built housing unit. A family qualifying for assistance provided a down payment of at least 5 per cent of the purchase price, with CMHC providing a mortgage for the remainder. If the payments of principal, interest, and taxes exceeded 25 per cent of income, CMHC contributed until the payments reached 25 per cent of the family's income or until the effective rate of interest on the loan was 8 per cent. If the ratio of payments to income was still more than 0.25 when the interest rate was 8 per cent, a further grant of up to $300 a year was available to reduce the ratio to 0.25 – the maximum being almost immediately raised to $600. The conventional mortgage rate of interest at the start of the program was 10 per cent. In some cases eligible families obtained loans from private lenders which could be combined with CMHC

TABLE 21

CMHC activity under the Assisted Home Ownership Program, Ontario 1973-76

	Units	Loans ($000)	Loan per unit ($)	Federal Grants ($000)	Percentage of Ontario housing starts
1973	672	13,851	20.6	n.a.	0.6
1974	5291	138,165	26.1	50	6.2
1975	4030	129,082	32.0	916	5.0
1976	87	3,239	37.2	2399	—

SOURCE: CMHC (1973a - 1976a). The aggregate totals for new and existing housing for one year were subtracted from the aggregates of the next year to obtain annual figures.

assistance, but it is only those households receiving CMHC mortgages that are examined here.

Not surprisingly the program proved extremely popular and was rapidly oversubscribed. The prospect of a large and growing commitment of both loans and subsidies in a time of expenditure restraint led to revisions in the program in November 1975. For any two-person household, regardless of income, buying a house priced below the AHOP limit the program offered a special interest-reduction loan. Mortgage financing was arranged privately first, and then an initial advance on a CMHC loan was established, so that actual payments on the mortgage minus the loan advance implied that the mortgage interest rate was reduced to 8 per cent. Further advances were made on the loan for four years, being reduced annually by one-fifth of the initial amount. Over the first five years the loan was interest-free, and at the end of the sixth year the loan was repayable over a number of years as an escalated payment mortgage. If the maximum interest-reduction loan was not sufficient to bring payments down to 25 per cent of income, households with one dependent child were eligible for grants of up to $750 a year to bring payments down to 25 per cent. This assistance was also reduced by one-fifth annually over five years.

The replacement of interest-reduction grants with interest-reduction loans indicated a withdrawal from the new approach of direct subsidies for homeownership and a return to the old approach of assisting the private sector. The interest-reduction loan procedure, in conjunction with a regular mortgage, created a pattern of repayment over the term of a mortgage such that annual payments are equal in real terms, rather than in nominal terms as is the case with a conventional mortgage. The same result could have been achieved with a single graduated-payment mortgage offered by private sector lending.

Further changes announced in May 1978 made this withdrawal complete. No longer is any subsidization available under AHOP; only the interest-reduction
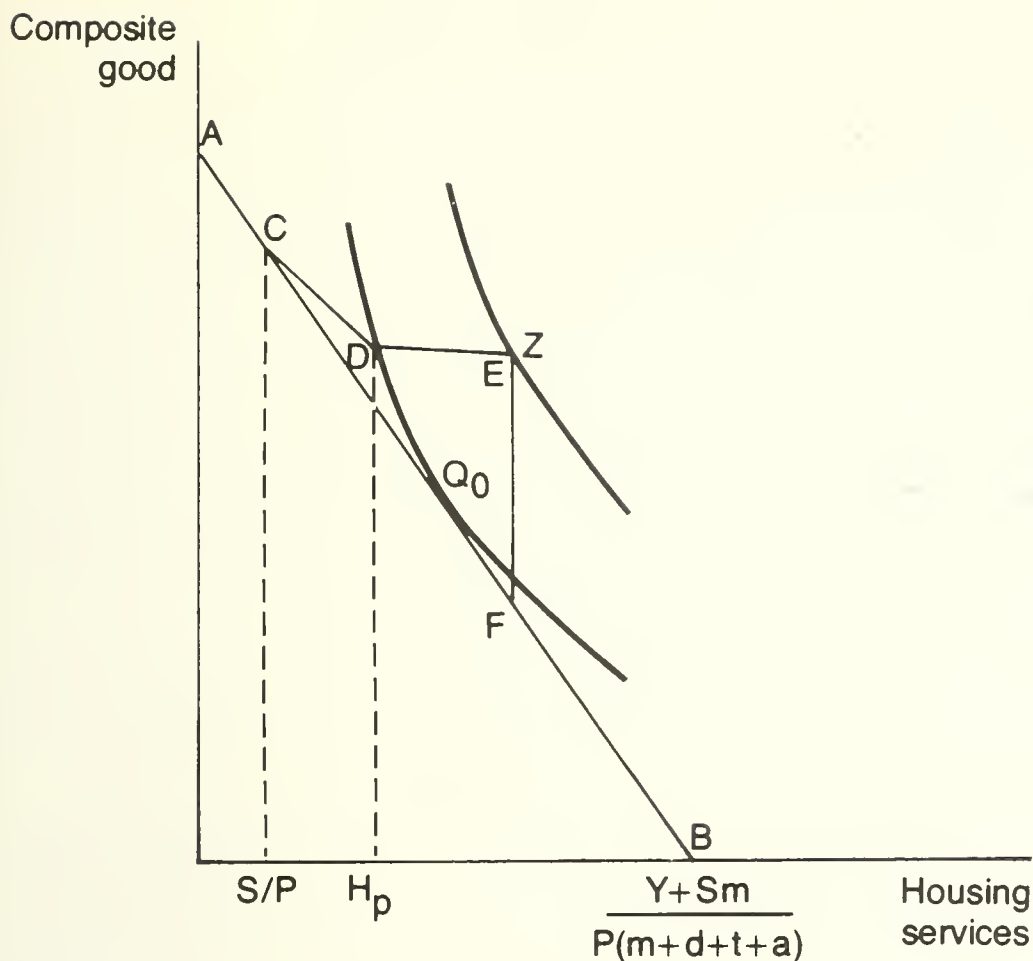
Figure 6
Household choice with the assisted home ownership program

loan remains. In addition, CMHC hopes that few such loans will be needed because private lenders will be encouraged to offer graduated-payment mortgages. This new mortgage instrument may now be insured under the National Housing Act. Private lenders have reacted very cautiously to this inducement to offer the new instrument, and it is as yet too soon to tell whether it will be widely used.

Whether in response to a desire to restrain government spending or out of recognition that large subsidies for homeownership made little sense on equity grounds, the approach to assisted homeownership has reverted to what it was in the 1950s: to redress problems with the operation of private capital markets and to offer no direct cash subsidies.

Measuring the benefits
Data dealing with the AHOP program as it operated in 1974 were analysed. The program had a somewhat different effect on household choice than the other two ownership programs. The choices facing the household with and without AHOP are illustrated in Figure 6.

As before, the household faced line *AB* as a renter and coincident line *ACB* as owner. Under the program the household is first eligible for a low-interest mortgage which reduces the price of housing beyond *C*. It is not eligible for further subsidy until principal, interest, and taxes exceed 25 per cent of income with the mortgage financing. At some quantity of housing services H_p the subsidy begins. Beyond this quantity an interest-reduction grant is available to

bring the rate of interest as low as 8 per cent. The net effect of the procedure is that for quantities of housing beyond H_p payments remain at 25 per cent of income; in other words the price for the marginal unit of housing has dipped almost to zero beyond H_p. The only price paid by the household is depreciation and maintenance, a more than 95 per cent reduction in the price of housing. The cash subsidy, available after the interest-reduction grant, has an identical effect; the price of an additional unit of housing is almost zero until the maximum annual grant is reached. The choices facing the household have become *ACDEFB*. Under such a program it is evident that most households will select the maximum quantity of housing purchasable, subject to the availability of that size of AHOP home in their community.

The benefits were measured as before (see appendix F for the derivation and calculation).[2] Data provided by CMHC on all AHOP loans made in Ontario in 1974 were used. Again a differential incidence approach was adopted.

Like the residual lending program, the introduction of AHOP increased both the demand for and the supply of housing. There was likely some offsetting reduction in private market housing starts because builders switched into the program and because of increased government borrowings to finance the program. On balance the program probably caused little change either up or down in housing prices and rents.

Distribution of the benefits

The distribution of the benefits of the AHOP program is presented by income and age in Tables 22 and 23. Like other homeownership programs, AHOP provided assistance to young families of moderate income, although only a tiny percentage of the eligible households were able to participate. The average benefit of a marginal change would be about $890 per year, a figure between the residual lending program and the HOME plan. Both the market value measure and the consumer's surplus measure reveal that AHOP has a very progressive pattern

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2 The subsidy under AHOP is reduced through time. Calculations are done on the first year of the program and are comparable to those done on other programs. However, if the capitalized value of the household's participation in the program were to be calculated, this reduction must be recognized. For any program the capitalization calculation would have to compute the annual actual payment of a household, the annual market value of the housing, and the probability that the household would remain in the program (without capitalizing future benefits into the sale price of a house). With the exception of AHOP, all programs likely have a similar relationship between annual value of the first year and capitalized value. I am grateful to Peter Lepik of the Ministry of Housing in Ontario for raising this issue.

TABLE 22

Distribution by income class of benefits among homeowners participating in the Assisted Home Ownership Program, Ontario 1974

| Income ($) | Distribution of participants (%) | Average differential benefits ($) | | Differential incidence | | Participants as a percentage of the entire class |
		Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	
0 - 1,999	—					
2,000 - 3,999	—					
4,000 - 5,999	1	-414	-303	-0.079	-0.058	—
6,000 - 7,999	6	-300	-69	-0.041	-0.009	0.1
8,000 - 9,999	27	-185	141	-0.020	0.015	0.6
10,000 - 11,999	38	7	586	0.001	0.053	0.8
12,000 - 14,999	23	188	988	0.014	0.076	0.3
15,000 - 24,999	5	494	1820	0.030	0.111	—
25,000+	—					

TABLE 23

Distribution by age class of benefits among homeowners participating in the Assisted Home Ownership Program, Ontario 1974

| | | Average differential benefits ($) | | Differential incidence | | |
| | Distribution of partici- | Market value | Consumer's surplus | Market value | Consumer's surplus | Participants as a percentage |
Age	pants (%)	measure	measure	measure	measure	of the entire class
0 - 24	16	−23	450	−0.002	0.044	0.3
25 - 35	61	−6	580	−0.001	0.053	0.5
36 - 44	18	24	665	0.002	0.057	0.2
45 - 54	5	−7	555	−0.001	0.050	0.1
55 - 65	—					
66+	—					

of benefits compared to a neutral alternative. In contrast, however, the probability of benefiting rises with income over most of the range. Both measures show little difference among the benefits accruing to each age class, although most of the beneficiaries are young and the probability of participating falls with age.

On its own terms AHOP seems to meet its goals, concentrating its benefits on middle-income families and having a very progressive pattern across this group. As with many ownership programs, however, two major problems remain. The benefits which accrue to middle-income households are high compared to rental programs which assist households of lower incomes. And there is significant redistribution from all non-beneficiaries, many of whom are in similar economic circumstances or even worse off.

6
Income taxation

When discussing housing policy, attention normally focuses on the programs explicitly directed at the housing market, such as public housing, assisted homeownership, or mortgage lending. The impact of these programs on income distribution is very evident. But other activities of the public sector have at least as large an effect, and in many instances an even larger one, on housing markets and housing policy goals than the housing programs themselves. Federal and provincial transportation policies influence urban growth and the choice between public transit and the private automobile, which in turn shape housing markets. Immigration policy and intergovernmental financial arrangements are influential too. Welfare assistance, providing income which is used to purchase housing, represents a significant indirect housing assistance program.

One area of public sector activity in particular, the raising of revenue through the tax system, has attracted increasing attention for its impact on the housing market. Property taxes, sales taxes, and income taxes are all important, but only the latter are examined in this chapter. The income tax laws through specifying what income shall be subject to tax, influence a household's decision about how much housing to consume and whether to own or rent housing and affects as well the decisions of suppliers by determining the relative attractiveness of investing in rental real estate. These influences alter housing prices, the quantity of housing produced, and the distribution of income.

The income tax system is not simply an instrument of housing policy. Indeed, most housing ministries have no control over income taxation. Nevertheless certain tax provisions are openly designed to influence housing markets, while others in pursuing different goals have an equal influence. The income tax system has to be considered an integral part of the housing-related activities of the public sector. The provisions of the tax system relating to housing turn out

to have a far more significant impact on income distribution than most of the explicitly redistributive housing programs.

It was impossible in this chapter to examine all the income tax provisions affecting the housing market. More comprehensive overviews are available in Price Waterhouse and Company (1975), Smith (1977), and Canadian Tax Foundation (1977). Two of the most important provisions were chosen for detailed scrutiny: the exemption for imputed income and the allowable depreciation on rental buildings. In each case the relevant tax legislation is described, a method of evaluating the benefits developed, and the benefits calculated and distributed by income and age. A concluding section provides brief examinations of capital gains taxes, the deduction of mortgage interest, and Registered Home Ownership Savings Plans.

EXEMPTION OF IMPUTED INCOME

The legislation
The single most important effect the income tax system has on the housing market arises because of the definition of income subject to tax. Under current law in Ontario and all of Canada, the value of the flow of services from owned housing, which is income in kind to the taxpayer, is exempt from taxation. Similarly, the service flow or imputed income from owning any real asset, a car, a boat, jewellery, or a painting, is not taxed. The imputed income from housing, however, is by far the largest part of such income. The exemption exists despite the fact that many forms of income in kind are taxed, especially if the income is received from an employer (such as room and board provided by an employer).

If imputed income were taxed, it is probably safe to presume that it would be treated like other forms of non-wage income. The gross value of the imputed income would be taxable, but deduction would be permitted of those expenses incurred to earn the income. In the case of housing, deductions would be permitted for property taxes paid, depreciation, maintenance costs, and mortgage interest payments. The addition to taxable income for a taxpayer, that is, his annual net imputed income N, can be expressed as follows:

$$N = RQ - m(PQ\text{-}E) - dPQ - tPQ - aPQ, \tag{8}$$

where Q is the number of units of housing stock in the taxpayer's dwelling unit, R is the annual rental rate per unit of stock, m is the mortgage rate of interest, P is the price per unit of housing stock, E is the taxpayer's equity in his house, d is the annual rate of depreciation, t is the annual rate of property taxation, and a is

the annual rate of maintenance. Recalling the relationship between R and P of equation (2), which is assumed to hold in equilibrium, and assuming that the long-run net return to housing is m, it can be shown that net imputed income is equal to mE.

The distinction between gross and net imputed income should be emphasized. The gross imputed income from a dwelling unit RQ is used in computing national income. Net imputed income is associated with a given homeowning household and is a function both of the services yielded by the house and the financing of the ownership.

Before analysing in detail the effects of the exemption for imputed income, the illustration in Table 24 will be helpful in understanding the nature of this tax provision. Consider three households, each with earned income of $18,000 a year and $10,000 in savings from past periods. Each household lives in an identical dwelling: one rents the dwelling and invests the savings in a bond; another purchases the dwelling using all the savings and a mortgage; the third purchases the dwelling using only $5000 of the savings and a mortgage, the other $5000 in savings being placed in a bond. It is assumed that there are no capital gains from housing. The households are similar in that each has the same income, savings, and housing and differ only in the form of housing tenure and method of financing. A neutral tax system would leave each of these households with the same income after paying taxes and paying for their housing. Obviously this is not the case in Ontario.

The typical taxpayer has a clear incentive to own rather than rent housing and to place all savings in housing equity rather than in bonds. The size of the incentive is a function of the marginal tax rate of the taxpayer and the amount of savings. If the taxpayer had no savings, he would be indifferent as between owning and renting housing. In Canada a new tax provision reduces the incentive. The first $1000 of interest earnings are exempt from taxation, and so only those taxpayers with savings of more than $10,000 face an incentive to own rather than rent housing (assuming an interest rate of 10 per cent on bonds). This interest exemption will be ignored in what follows to focus attention on the tax treatment of the housing sectors and because the exemption was not available in 1971, the year on which the analysis is based. Its existence, however, should be constantly held in mind.

A number of methods of reducing this distortion of tenure choice and savings allocation caused by the tax system have been suggested. The most obvious is to include imputed income from housing assets (and all assets) in taxable income. Every taxpayer in the example would have an after-housing disposable income of $6600, as the renter does under existing law. An alternative would be to permit the deduction of a certain portion of rental payments from taxable income. This

TABLE 24

Comparative positions of taxpayers by housing tenure and financing

	Renter ($)	Owner with $10,000 equity ($)	Owner with $5000 equity ($)
Income			
Earnings	18,000	18,000	18,000
From financial assets	1,000	–	500
Imputed from housing assets (net)	–	(1,000)	(500)
Taxable income	16,000	15,000	15,500
Taxes	3,400	3,000	3,200
Disposable income	12,600	12,000	12,300
Housing expenditures			
Rent	6,000	–	–
Mortgage interest	–	4,000	4,500
Ownership expenses	–	1,000	1,000
After-housing disposable income	6,600	7,000	6,800

NOTE: Assume that the house has a market value of $50,000 and there are $000 in annual costs associated with home ownership (there is no depreciation); the house rents for $6000 a year (derived from assuming that the long-run net return to housing is m and that the house has $1000 in annual operating costs); the mortgage rate of interest is 10 per cent; the rate of interest on bonds is 10 per cent; the taxpayer has an average tax rate of 20 per cent up to $15,000 and a marginal tax rate of 40 per cent beyond; and the taxpayer has $3000 in deductions.

portion could be treated as an interest payment (the landlord would treat this same amount as interest earnings). The taxpayer could deduct interest paid from interest earned in calculating his taxable income. In Table 24, if five-sixths of rent were regarded as an interest payment ($5000 interest payments and $1000 expenses), the renter would pay no tax on his interest earnings and have an after-tax disposable income of $7000, as the owner does under existing law. The position of the third taxpayer is unchanged. There remains an incentive to place all savings in a house. There also remains a disincentive to invest in anything which produces wage income, such as education, a disincentive not present under the first proposal. (For a discussion of the present law and proposed changes see Ontario Economic Council, 1976).

The Royal Commission on Taxation (Carter Commission) recognized this omission from the income tax base and commented that only the administrative problems of properly and equitably determining imputed income prevented a recommendation that it 'be included in the tax base, or to compensate for not

doing so, that the deduction of some portion of the rent paid by individuals who do not own their own home be permitted' (Canada, 1966). The latter alternative is not discussed further in the Carter Commission's report, so it remains unclear precisely what was meant. It should be noted, however, that to permit deduction of some portion of rent from *any* income would not ensure neutrality between owners and renters, a position that has been advanced (Kitchen, 1967). For example, under a proposal to permit deduction of five-sixths of rent from any income, the renter would have an after-tax, after-housing income of $8000, compared to the $7000 for the owner with all his savings in the house. This proposal would offer a great incentive to rent rather than own. A reform using the mechanism of rent deduction can only permit deduction of rent payments against earnings on savings. It is only in the treatment of returns from savings that the current law causes a distortion of the choice of housing tenure. A household with no savings is not influenced by the tax treatment of imputed income.

Some critics of the report of the Carter Commission have argued that the subsidy to homeowners under the present law 'is far too large to be ignored solely on the basis of the questionable belief that the attempt to bring this element into the income tax is administratively doomed to failure' (Brazer, 1967). In any event, if net imputed income were measured for tax purposes as the product of homeowners equity and the mortgage rate of interest, and if all residential property were assessed at market value, the administrative problem would be greatly reduced. The province of Ontario has assessed all property at market value, but these assessments have not been used in the property tax system. The political barriers, less emphasized but probably more important, remain. That a tax law is hard to change which appears to benefit over 50 per cent of households and is of special importance to elderly persons with homes and small incomes can scarcely be viewed as an amazing state of affairs.

Measuring the benefits
As usual, the benefits of the exemption of imputed income will be measured in two ways. The market value measure used previously was the difference between the market value of the housing and the actual payments by the household. The analogous measure here would be the extra tax revenue collected if the exemption were removed and there were no changes in household choices of housing consumption, tenure, or financing.

This measure is the one used in most previous studies of the tax exemption in Canada and in the United States. Aaron (1970) measured the benefits in this manner (and includes a summary of the main American studies) as did the

principal study of the Canadian situation (Clayton, 1974). The latter surveyed Canadian and American studies and presented its own estimates of the subsidies in Canada expressed as the ratio of the tax savings to gross rental cost or, alternatively, viewed as the percentage price reduction. To a homeowner with a marginal tax rate of 31 per cent the implicit price reduction caused by the exemption of net imputed income was calculated to be 18 per cent. Another Canadian study (Kitchen, 1967) presented a general discussion of the concept of imputed income, the rationale for and problems with its inclusion in the income tax base, and an estimate of gross imputed rent and net imputed rent (on the assumption that net rent was 10 per cent of gross rent, an extremely low value). The total net imputed rent on owner-occupied dwellings in 1966 in Canada was estimated to be $421 million.

Estimating the consumer's surplus measure demands a representation of those bundles of goods available to a household with and without the exemption. The indifference curve framework developed above to analyse ownership programs must therefore be modified somewhat to deal with income taxes.

All the assumptions of chapter 3 can be applied here except that the discussion will be in terms of after-tax income rather than simply of income. The household has savings S from past periods and annual after-tax wage income $\bar{Y}$ and faces a marginal tax rate x. Savings may be invested in a financial asset yielding r per cent a year (implying a total after-tax income of $\bar{Y} + Sr(1-x)$) or used to purchase housing stock. The household can obtain a mortgage with a rate of interest m. It is assumed that the available return on invested savings is equal to the net return on housing m. There may be occasions when the investment rate is below m, in which case even in a neutral tax world a household with savings will have an incentive to own housing (Fallis, 1978). That case will not be dealt with here.

Consider first the situation facing a household when imputed income is subject to taxation. If the household were to rent housing and invest its savings in a financial asset, it could purchase those bundles of goods represented by budget line AB in Figure 7. The intercept A is $[\bar{Y} + Sr(1-x)]/P_0$, where P_0 is the price of the composite good. The intercept B is $[\bar{Y} + Sr(1-x)]/R$. If the household were to purchase housing, its budget line ACB would coincide with the renter's budget line, that is, the household would be indifferent as between owning and renting housing. If the household were to purchase one unit of housing stock using savings, the cost would be forgone earnings on savings $Pm(1-x)$, plus depreciation, maintenance, and taxes $P(d+t+a)$ plus tax on imputed income Pmx. The total cost is $P(m+d+t+a)$, which is identical to the cost as a renter. The household is indifferent as between using savings to
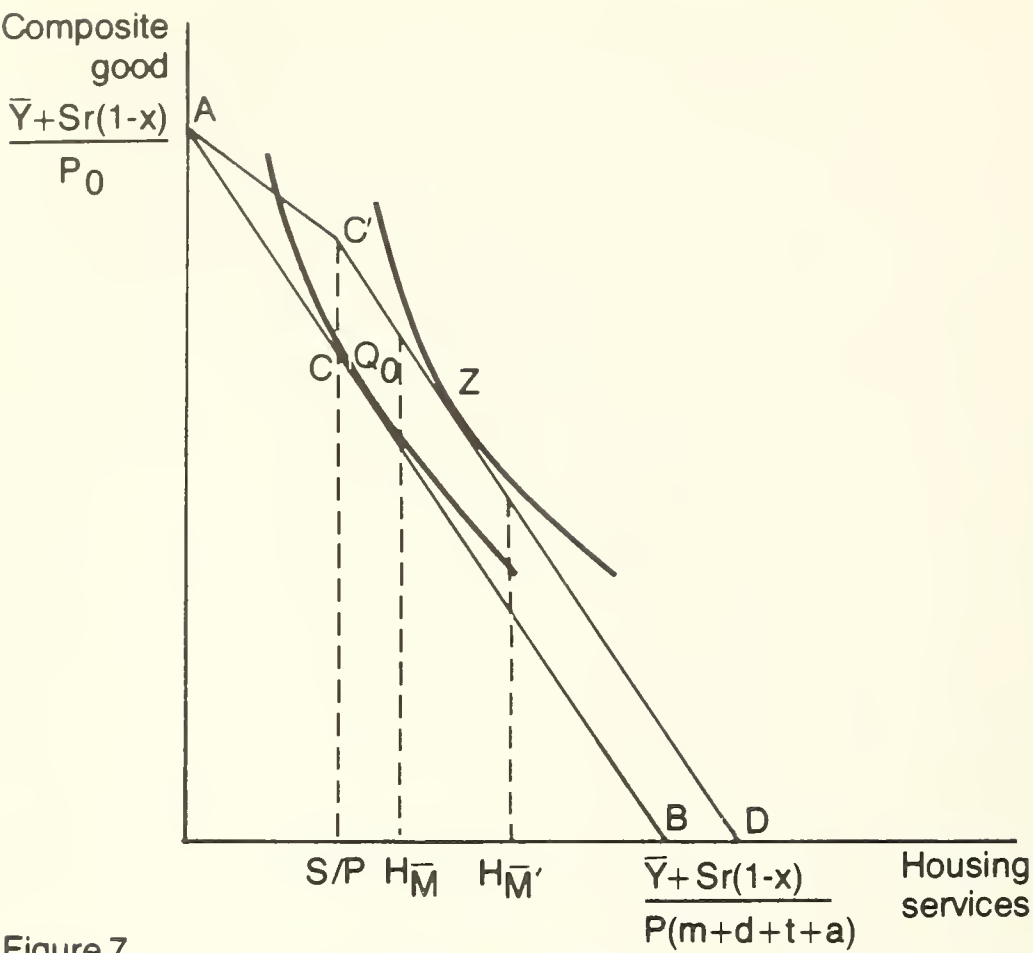
Figure 7
Household choice with the exemption for imputed income

purchase housing or leaving its savings in investments and financing the house purchase with a mortgage,[1] but it will be assumed that savings are used first. The point C corresponds to the maximum quantity of housing stock which may be purchased using savings and has co-ordinates $(S/P, [\overline{Y}-S(d+t+a) - Smx]/P_0)$. Beyond C, housing is acquired using a mortgage. The cost of each additional unit of housing is mortgage interest Pm plus depreciation, maintenance, and taxes, which totals $P(m+d+t+a)$. There is no additional tax which must be paid on imputed income because net imputed income does not increase if the unit is financed using a mortgage. Again, the cost per unit of housing service as owner is identical to that as renter. The owner may be limited by the mortgage market to some maximum quantity of housing $H_{\overline{M}}$.

Consider now the actual situation where imputed income is exempt from taxation. It is assumed that there is a perfectly elastic supply curve of housing services, an assumption almost universal in previous studies. The exemption of imputed income has the effect of changing a household's perceptions of the price of a unit of housing stock, given the supplier-perceived price P, because the

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1 If a household used savings to purchase a unit of housing the cost would be $P(m+d+t+a)$ as computed in the text. If a mortgage were used the cost would be mortgage interest Pm, plus depreciation, maintenance, and taxes $P(d+t+a)$, but no tax on imputed income, which is just $P(m+d+t+a)$.

household no longer must pay the tax on imputed income of Pmx. This change in perception will shift the supplier-perceived demand curve in much the same way as a per-unit subsidy does. The prices R and P faced by the supplier remain unchanged because there is a perfectly elastic supply curve. It is assumed that m is not changed by the granting of the exemption. These assumptions imply that there is no capitalization of the tax exemption. The benefits accrue to both homeowners at the time the exemption was announced and to all who become homeowners thereafter.

The choices available to a household if it were to rent housing remain unchanged along line AB; but the bundles available to an owner have become $AC'D$ (Figure 7). The tax exemption increases possible consumption and dramatically influences the choice of housing tenure, because if the household has any savings there will be an incentive to secure housing as an owner rather than as a renter.

The line segment AC' shows the choices available when the household uses savings to purchase housing stock rather than a mortgage (it can be shown that it is preferable to use savings before securing a mortgage[2]). The point C' again corresponds to the maximum quantity of housing purchasable using savings and has co-ordinates $(S/P, [\bar{Y}-S(d+t+a)]/P_0)$. To purchase more than S/P units of housing a mortgage must be secured. The cost to an owner is then $P(m+d+t+a)$, which is the same as the price of renting a unit, so $C'D$ is parallel to AB. Very likely the exemption would increase the maximum quantity purchasable to $H_{\overline{M}}'$ because the cost of ownership no longer involves taxes on imputed income, and therefore a larger mortgage would be available to a household with a given income.

The model has described the choices with and without the exemption and so can be used to estimate the consumer's surplus benefits to homeowners. The algebraic derivation of the benefit measures is presented in appendix G. This representation of the effect of the exemption has two most interesting implications. In contrast to previous studies, which characterized the exemption as equivalent to a price reduction, this model suggests the exemption is equivalent to a price reduction only if the household does not have a mortgage. For households with a mortgage the exemption is perceived as an income transfer, a parallel shift in the budget line from AB to $C'D$. Both Canadian studies (Kitchen, 1967; Clayton, 1974) have treated the exemption as analogous to a fall in the price of housing services. Aaron (1970) characterized the

2 If a household used savings to purchase a unit of housing the cost would be forgone earnings on savings $Pm(1-x)$ plus depreciation, maintenance, and taxes $P(d+t+a)$. If a mortgage were used the cost would be $P(m+d+t+a)$.

American tax treatment of owner-occupied housing as a price reduction. The American situation is somewhat different than the Canadian in that not only is imputed income exempt from taxation but property tax and mortgage interest payments may also be deducted from taxable income. Our model could easily be extended to represent these tax laws. If the rate of return on savings equals m, the American situation is equivalent to a price fall; however, if the returns on savings are less than m, the exemption is a combination of price and income changes.

A closely related implication of this model is that for homeowners with a mortgage the tax exemption is an efficient subsidy. The marginal rate at which households may substitute housing for other commodities is the same with and without the exemption. For over 50 per cent of households in 1971 and for most purchasers of their first house the subsidy implied by our tax law is efficient. The argument against the tax exemption on the ground that it distorts resource allocation (Kitchen, 1967) must be muted. The distribution of the benefits will likely be a more important issue in assessing the exemption.

Estimating the benefits for homeowners required knowledge of x, b, and $\bar{Y} + Sr(1-x)$ for each household, the market value of the house, the homeowner's equity, m and $(d+t+a)$. The method of estimation is described in appendix G. Data were used from a sample of households produced by Statistics Canada which linked the Survey of Household Facilities and Equipment, May 1972, with a special Rent Survey, May 1972, and with the Survey of Consumer Finances, April 1972. These linked surveys, usually called the HIFE (1971) survey (Canada, 1972c) provided information on the market value of the house, the total mortgage principal outstanding in May 1972, household income, and taxes paid in 1971. The marginal tax rate x was calculated from taxes paid and the 1971 Ontario tax schedule, which of course was the schedule in effect before tax reform. The parameter b of the Cobb-Douglas utility function is the ratio of housing expenditure to total income and was separately calculated for each household (see appendix G). The income of a household $\bar{Y} + Sr(1-x)$ is after-tax income before purchase of housing or any other commodities, so that the product of the equity in the house (part of savings) and $r(1-x)$ had to be added to recorded after-tax income. The mortgage rate of interest was 0.094, the average conventional mortgage rate in 1971 and $(d+t+a)$ was assumed to be 0.03 based on Survey of Family Expenditure (Canada, 1969c) data.

Distribution of the benefits

The distribution of the average benefit per homeowner by income and age of the head of the household will be discussed below. It is worthwhile to recall that the most important redistributive impact of granting the tax exemption is between

owners and renters, because it significantly reduces the tax liability of owners. The reduction in government revenue might be matched by a decline in public spending, or an increase in other taxes, or another exemption, any of whose costs would be borne by both owners and renters. Granting this exemption hence causes significant redistribution between households of similar income and age. Using a differential incidence approach and concentrating on the distribution by income and age among *homeowners*, both the owner-to-renter transfer and the horizontal inequality are hidden. White and White (1965) offer a detailed discussion of horizontal inequality in the United States.

The principal beneficiaries of the exemption are of course homeowners, and only benefits to them will be examined here. As a group, homeowners are found across all income and age classes, but the percentage in a class rises with income and rises with age until 36-44 and then remains fairly constant (see Table 25).

The distribution of the benefits by income is presented in Table 26. As in the study of previous programs but especially in this case, it is analytically incorrect to present the benefits in a column by income class implying a comparison of the household's income with and without the exemption. Such a change in the tax structure would almost certainly imply significant macroeconomic effects; there would be changes in prices, output, and employment if the exemption were removed. To escape the necessity of analysing the distributive effects of such changes a differential incidence approach is adopted. The benefits of the exemption are compared with a neutral alternative exemption equal in forgone tax revenue yielding benefits to each homeowner in proportion to their income. The benefits of the imputed income exemption can never, therefore, be expressed except in comparison with this neutral alternative.

Previous studies have used not the differential incidence approach but rather a specific incidence one, examining the exemption alone. Most have assumed that there is a perfectly elastic supply curve for housing services, so that changes in the demand curve for housing resulting from the income tax laws were seen to have no impact on the price of housing services. All homeowners, including new entrants into the ownership market, receive benefits from the exemption. Renters are unaffected. A recent paper by White and White (1977) has examined alternative supply elasticity assumptions and shown they are crucial in determining the incidence of the tax laws and can imply significant burdens on renters.

This specific incidence approach is clearly inappropriate because it ignores the enormous macroeconomic effects that would result from this massive change in the tax laws (for a discussion see Musgrave and Musgrave, 1976). The distributional changes found by White and White (1977), while interesting, must be combined with the changes which would result from a compensating change in government activities, such as an increase in income taxes.

TABLE 25

Homeownership characteristics in Ontario, 1971

	Percentage homeowners	Average home value ($)	Average equity ($)
Income			
0 - 1,999	49	22,200	20,000
2,000 - 3,999	52	23,500	21,900
4,000 - 5,999	45	22,600	19,800
6,000 - 7,999	54	23,800	20,000
8,000 - 9,999	57	23,500	18,200
10,000 - 11,999	63	26,500	20,500
12,000 - 14,999	72	27,600	21,100
15,000 - 24,999	79	31,900	24,200
25,000+	92	42,190	32,400
Age			
0 - 24	11	20,600	9,300
25 - 35	45	25,900	15,500
36 - 44	73	28,800	21,000
45 - 54	76	28,900	23,800
55 - 65	76	26,700	24,400
66+	72	23,600	22,900
Average	62	27,000	21,500

SOURCE: Canada (1972c)

Both the additional tax and the consumer's surplus measures indicate that, compared with the neutral alternative, the exemption for net imputed income has a progressive pattern of benefits up to the middle-income range. The latter measure reveals a slightly less progressive pattern. The consumer's surplus measure always exceeds the market value measure for any income class, indicating that the exemption of imputed income is an inefficient subsidy. The inefficiency follows of course from the fact that some households in each income class do not have a mortgage; if all households had a mortgage the two measures would be identical. Using the percentage of each income class consisting of homeowners as the participation in the program, there is a problem of vertical equity because the participation rate rises with income.

The distribution of benefits by the age of the head of the household compared to a neutral alternative, shown in Table 27, clearly illustrates that significant redistribution among age classes occurs. This redistribution may be at least as important to politicians (and voters) as the redistribution among income classes. If the current exemption were replaced by a neutral alternative, older homeowners would be worse off and younger owners better off. Recognizing the normal pattern of income over the life cycle, the exemption increases the

TABLE 26

Distribution by income class of benefits from the exemption of imputed income, homeowners, Ontario 1971

		Average differential benefits ($)		Differential incidence		
Income ($)	Distribution of home-owners (%)	Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	Homeowners as a percentage of the entire class
0 - 1,999	6	-327	-119	-0.272	-0.099	49
2,000 - 3,999	8	-305	-63	-0.101	-0.021	52
4,000 - 5,999	7	-201	-76	-0.040	-0.015	45
6,000 - 7,999	10	-131	-40	-0.018	-0.006	54
8,000 - 9,999	13	25	80	0.003	0.009	57
10,000 - 11,999	14	42	112	0.004	0.010	63
12,000 - 14,999	17	123	222	0.009	0.017	72
15,000 - 24,999	20	141	288	0.008	0.016	79
25,000+	5	293	482	0.009	0.015	92

TABLE 27

Distribution by age class of benefits from exemption of imputed income, homeowners, Ontario 1971

		Average differential benefits ($)		Differential incidence		
Age	Distribution of home- owners (%)	Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	Homeowners as a percentage of the entire class
0 - 24	1	362	393	0.036	0.040	11
25 - 35	18	237	295	0.020	0.025	45
36 - 44	22	91	180	0.007	0.014	73
45 - 54	24	—	118	0.0	0.009	76
55 - 65	20	-122	27	-0.011	0.002	76
66+	15	-250	-34	-0.043	-0.006	72

differences between age classes of homeowners. The usual method of measuring the benefits gives an incidence pattern consistent with that revealed by the consumer's surplus measure, although benefits measured by the latter are, again, always larger, indicating the inefficiency of the subsidy. The redistribution to the old is reinforced by the fact that the percentage of homeowners in each age class rises with age.

This clear and enormous subsidy to homeowners (and all owners of real assets) is usually justified by arguing that there exist positive externalities from home ownership. Society, not just the individual household, derives a benefit when the household owns its own home. There will be too few homeowners from society's point of view unless a subsidy is provided because individuals do not consider the wider social benefits when deciding whether to own or rent housing. The benefits to society are difficult to define precisely and impossible to measure objectively, which is not to imply necessarily that they are insignificant or non-existent. It is usually argued that homeownership gives a household a greater sense of responsibility and a greater stake in the community, and therefore that members of the homeowning household are less likely than others to act in an anti-social manner. At the micro level, it is said, neighbourhoods are more stable; and at the macro level, society functions better for all. The positive benefits are argued to be especially important when the household has young children, who should be raised in a stable environment, which homeownership is said to ensure.

As one thinks further about these positive externalities from ownership they prove very elusive. In discussions of the best environment for rearing children the distinction between single-family detached housing and owned housing is often rather murky. When the two characteristics were found almost always in the same dwelling unit, the distinction was less relevant. But today with ownership of row houses and both low-rise and high-rise condominium apartments composing such a significant portion of the housing market, it becomes more important. Probably the type of housing rather than the form of tenure is the important criterion in discussions about rearing children.

A further confusion concerns the distinction between ownership and the quantity of housing consumed. Do more external benefits occur if a family owns a spacious detached house than if it rented the same house? It seems intuitively likely that the more significant externalities result by ensuring that families consume a sufficient quantity of housing services rather than that they own the dwelling they inhabit. Of course one can reject on any number of grounds the proposition that ownership yields positive externalities. It may be argued that homeownership produces negative externalities which more than outweigh the positive. Anyone who has lived beside an owner obsessed with the quality of the

neighbourhood can testify to the negative externalities. Alternatively, it may be argued that there are no externalities, or at least none that can be identified and measured sufficiently well to justify the existence of a subsidy.

In any event, if the subsidy is intended to internalize the externalities from homeownership it is clearly badly designed. The model suggests that the exemption moves the household from being indifferent as between owning and renting to a preference for ownership. However, the incentive rises with the income of a household and with the amount of savings available to invest in housing and is not focused on the group where the externalities are likely to be most important: families with young children. It is beyond the scope of this report to measure the cost in forgone tax revenue for each additional homeowner, but it is likely well above any measure of the positive externalities.

DEPRECIATION OF RENTAL HOUSING

The legislation

Canadian income tax laws contain special provisions on income from investment in rental residential real estate. One of the most significant is the deduction of depreciation in excess of true economic depreciation: frame buildings may be depreciated at a rate of 10 per cent annually using a declining balance method, and buildings of other types of construction may be depreciated at a 5 per cent rate. A declining balance method of depreciation permits deduction of an amount equal to the rate times the remaining undepreciated capital cost. Using a 5 per cent rate, a building is seen to be producing less than 50 per cent of the original flow of services after fourteen years. Clearly there exist buildings of that age with far greater service flows (taking account of normal maintenance and repairs).

The advantages of the depreciation regulations are mitigated somewhat by provision for 'recapture' of excess depreciation. Suppose an investor owned a building worth $100,000 to which he made no further improvements, simply depreciating it for tax purposes every year at 5 per cent; after five years he would have a building apparently worth $77,378. At that time he sells the building for $85,000. The building has been excessively depreciated by $7622, an amount which is recaptured and must be entered as income in the year of sale. Prior to the tax reform of 1 January 1972 this recapture was unlikely to occur for many investors because of a provision which permitted pooling of all assets of a given class of depreciable property. Suppose in the fifth year the above investor purchased another building worth $100,000. For tax purposes the two buildings could be pooled so that the investor had assets of $177,378. On the sale of his original building this amount would be reduced to $92,378 by

deducting $85,000. There would not be any excess depreciation and no recapture. By simply reinvesting the proceeds of the sale, recapture could be postponed indefinitely. Since the 1972 tax reform, however, rental buildings which cost $50,000 or more must be treated separately, forcing an immediate recapture on disposition.

The liberal depreciation provisions are not simply equivalent to an extra deduction equal to the difference between allowable and true depreciation, because in the later years of a building's life allowable depreciation will have been used up but true depreciation continues. The depreciation provisions therefore influence the timing of taxable income from a project and the pattern of cash flow. The provisions have the effect of an interest-free loan. For many rental properties financed with a high ratio of borrowed funds, the effective tax rate to the investor is zero for the early years of the project.

It is not clear that the liberal depreciation provisions were designed to encourage investment in residential buildings. Allowable tax depreciation is seldom established to match true depreciation exactly. Furthermore, the allowable depreciation on the other eight classes of depreciable property is also liberal. All classes of assets are frequently depreciated at less than the rate allowed for tax purposes in the preparation of annual reports.

Recent legislation has provided especially advantageous treatment for new manufacturing and processing equipment: it can be depreciated over two years. This procedure is not available for construction investment. Other types of property have received and continue to receive at least as favourable depreciation treatment as part of government policy to encourage certain types of investment.

Unfortunately almost no research has been done on the true rate of depreciation of residential buildings or other types of asset. In Ontario it is 'generally accepted accounting practice' to depreciate buildings at a rate of 5 per cent for frame buildings and 2 1/2 per cent for other buildings when preparing annual reports. This suggests that the true rate of depreciation might be as little as half of the allowable rate. In any event, casual observation suggests that depreciation is much slower than the allowable rate. A study by an accounting firm (Price Waterhouse and Company, 1975) concluded that 'the capital cost allowances in respect of buildings may be regarded as relatively generous, in the sense that the amount of such capital cost allowances is more likely to be in excess of recorded depreciation or observed declines in value than is the case with respect to capital cost allowances on business assets in general.'

If the tax laws were changed so that all depreciable property could be depreciated at real rates, there might be relatively little effect on the housing sector because all investments would be less attractive. This analysis will assume that a change is made only for residential rental property, which will always

change the relative attractiveness of housing investment regardless of the treatment of other property. However, much further research is needed into the nature of depreciation and its treatment under the tax laws for all sectors.

The depreciation regulations have remained the same over many years and have not been used to influence the rental market in the short term. Other changes in recent years have had a significant impact on the attractiveness of investment in rental real estate. They have been motivated by concerns other than housing issues but their substantial side effects have mainly reduced the attractiveness of real estate investment (Smith, 1977). These changes and their influence cannot be dealt with here but discussions are available in Smith (ibid.) and Canadian Tax Foundation (1977).

Despite the fact that the depreciation regulations may not have been primarily designed to influence the rental housing market and certainly are not controlled by those in the bureaucracy whose primary responsibility is housing policy, they are an important part of the influence of government on housing. Their benefits (and costs) are as real as those which flow from public housing or ownership programs. Clayton (1974) has stated, albeit on the basis of 'suggestive rather than conclusive' analysis, that the effective rent reduction for renters due to these provisions is as large as the reduction for homeowners due to the exemption for imputed income. The research results below suggest that the influence is not nearly so large but is still significant.

Measuring the benefits
Unlike the housing programs examined earlier the depreciation provisions have their initial impact not on the consumers of housing but on investors in rental real estate. Therefore it is to the effect on investors that attention must first be directed and only later to the effect on households as consumers.

Investors in residential buildings for rental can be considered as agents producing housing services which are sold in the market. These services are produced using capital, land, and labour. The depreciation regulation permits in the first period an extra deduction from income of an amount equal to the difference between the allowable rate of depreciation w and the true rate d on the producer's capital, which implies an increase in income to the producer equal to the extra deduction multiplied by the producer's marginal tax rate. For one unit of capital the extra income in the first period of the life of a unit of capital is as follows:

$$z\,(w-d)P_k, \tag{9}$$

where z is the marginal tax rate and P_k is the price per unit of capital stock. It is important to remember that only an investor's capital (the building) is

depreciable, not the land, and that housing services are produced using capital, land, and labour, all of which must be paid from rent. This point has been ignored in previous studies which have implicitly treated rent as a payment to capital and assumed the full property value (the capitalized value of the rent stream) to be depreciable (Aaron, 1972; Clayton, 1974).[3]

Over the life of the unit of capital the depreciation provisions allow at first an increase in income and later a decrease in income compared to depreciation at the true rate. The present value of these changes in income is as follows:

$$V = zP_k \sum_{i=1}^{n} \left[\frac{(1-w)^{i-1}(w)}{(1+m)^i} - \frac{(1-d)^{i-1}(d)}{(1+m)^i} \right],$$ (10)

where n is the life of the capital equipment and m is the mortgage rate of interest used for discounting.

The tax law results in an addition to income for every unit of capital employed and can be analysed therefore as a reduction in the price of capital. The percentage reduction in price can be expressed as the ratio of the increase in income to the cost of a unit of capital, as follows:

$$V / P_k \times 100.$$ (11)

There is some possibility that the full benefits will not be realized but recaptured on the sale of the building, so the expected percentage fall in the price of capital would be equation (11) multiplied by a factor $(1-c)$ to reflect this possibility.

The fall in the price of capital lowers the cost curves of housing producers and provides an incentive to substitute capital for other inputs in the production of housing services. Assuming a Cobb-Douglas production function and a perfectly elastic long-run supply curve for housing services, the resulting percentage decline in rent may be expressed as follows:

$$[a_1 V(1-c)] / P_k \times 100,$$ (12)

where a_1 is the factor share of capital. Using likely ranges of the various parameters a high estimate of the decline in rents was calculated to be 6 per cent, a medium estimate 3 per cent, and a low estimate 2 per cent (appendix G).

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3 These studies assume a given depreciation rate and apply it against the property value. Implicitly the recognition that not all of the property value can be depreciated may be included in the selected depreciation rate; but such an approach ignores the possibility of changes in the capital intensity of producing housing services.
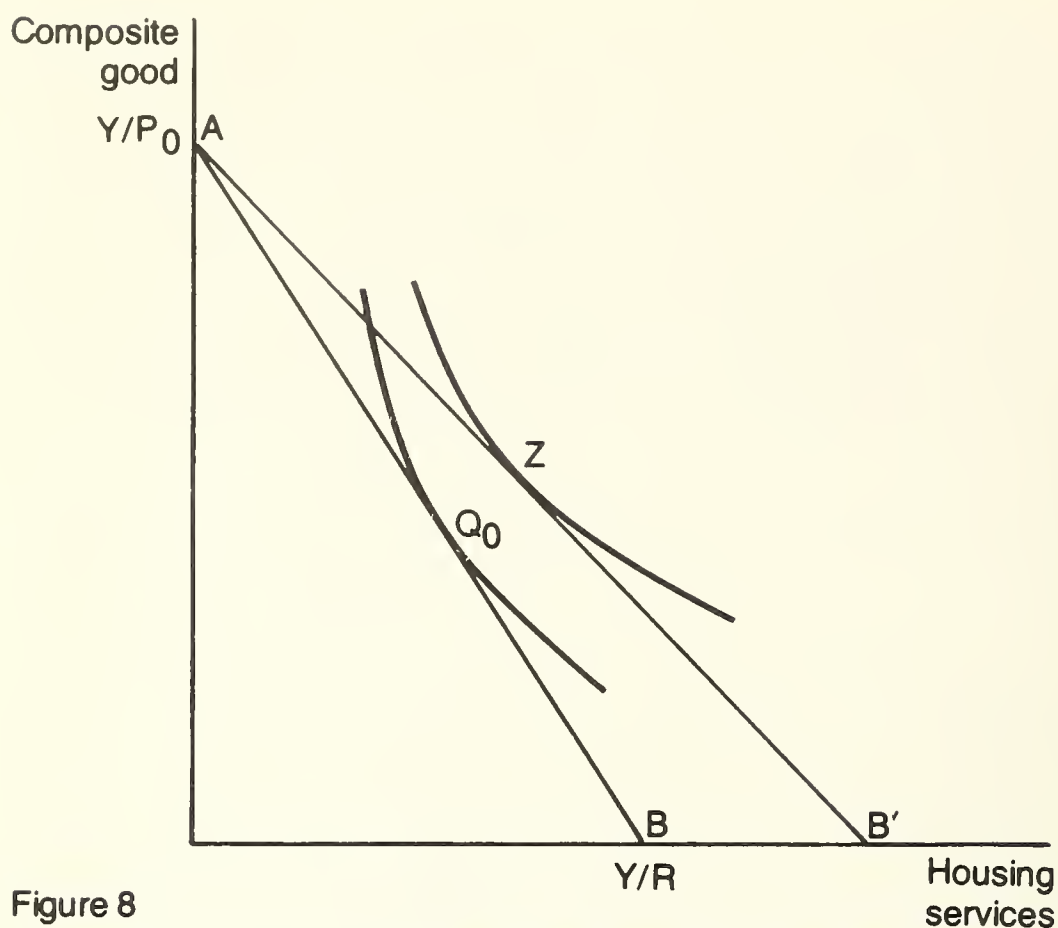
Figure 8

Household choice with the liberal depreciation provisions

Caption labels on figure: Composite good Y/P_0 (vertical axis), A, Z, Q_0, B, B', Y/R, Housing services (horizontal axis)

These estimates are much lower than those computed by Clayton (1974) and slightly lower than estimates of similar tax provisions in the United States (Aaron, 1972; Shelton, 1968) because the analysis considered the entire life of the depreciation provision not just the first year. The rental depreciation provision has no effect on the price of housing for ownership under this assumption of a perfectly elastic supply curve.

The effects of the depreciation provision on the choices facing a household can now be represented as in Figure 8. The tax provisions mean a fall in the price of rental housing which is available for any quantity of housing services demanded: the renter's budget line has moved from *AB* to *AB'*. If imputed income from homeownership were taxed and owners did not enjoy these liberal depreciation provisions, all households would become renters, just as the exemption for imputed income would mean all households with savings would become owners. In this analysis it will be assumed that households would not change their tenure because of the provisions and that benefits are assigned to all existing renters.

The benefits are again calculated using a market value measure and a consumer's surplus measure. Data on household income, rent paid, and age of the household head were obtained (Canada, 1972c). The *b* parameter of the Cobb-Douglas utility function was calculated for each household. The alternative program used in the differential incidence comparison was a tax reduction to all

renters in proportion to their income equal in cost to the forgone tax revenues under the depreciation provisions (appendix G).

Distribution of the benefits

The benefits to households from the 3 per cent rent reduction under the depreciation provisions (the medium estimate) are distributed by income and age in Tables 28 and 29. If the depreciation provisions were replaced by a neutral alternative, lower-income renters would be made worse off and upper-income renters better off. Compared to a neutral alternative the benefits show a progressive pattern using both the market value and consumer's surplus measures. The result is to be expected because renters spend a decreasing fraction of income on rent as income rises and all enjoy the benefit of a fall in rents, while the neutral alternative assists each household in the same proportion to income. In contrast to most of the previous programs, the participants place a value on the benefits nearly as high as the market valuation. There would be little gain in utility in moving to a pure cash subsidy. The criterion of vertical equity is also satisfied because the percentage of an income class that benefits falls with income.

Compared with a neutral alternative, the existing provisions are of benefit to the very young and the elderly. Again, both measures show a similar result. The provisions thus tend to smooth out slightly the normal life-cycle pattern of earnings. This conclusion is reinforced by the pattern of participation rates.

It is sometimes suggested that these depreciation provisions offset the exemption for imputed income, implying that the public sector is evenhanded in its treatment of the ownership and rental markets. Of course no such conclusion could be drawn based on an examination of only these two provisions of the income tax laws. Other provisions have a significant influence on the markets. A straight comparison between the two provisions, however, shows that the exemption is of far greater benefit to homeowners than the depreciation provision is to renters. Considering a marginal change in both tax laws, an average homeowner enjoys a benefit of about $750 annually, while the benefit to an average renter is about $100 annually.

SOME FURTHER TOPICS

Capital gains exemption

Capital gains have been subject to taxation in Canada since the reforms of the income tax system were implemented in 1972. Such gains still receive favourable treatment because only one-half of realized gains are entered as income to be taxed and because taxes are levied when capital gains are realized rather than on

TABLE 28

Distribution by income class of benefits from the liberal depreciation provision, renters, Ontario 1971

Income ($)	Distribution of renters (%)	Average differential benefits ($)		Differential incidence		Renters as a percentage of the entire class
		Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	
0 - 1,999	10	-32	-19	-0.028	-0.016	48
2,000 - 3,999	11	-26	-25	-0.008	-0.008	45
4,000 - 5,999	14	-16	-15	-0.003	-0.003	54
6,000 - 7,999	14	-8	-6	-0.001	-0.001	45
8,000 - 9,999	17	2	3	0.0	0.0	42
10,000 - 11,999	13	11	13	0.001	0.001	35
12,000 - 14,999	11	20	22	0.002	0.002	27
15,000 - 24,999	9	40	44	0.003	0.003	19
25,000+	1	98	100	0.004	0.004	8

TABLE 29

Distribution by age class of benefits from the liberal depreciation provision, renters, Ontario 1971

Age	Distribution of renters (%)	Average differential benefits ($)		Differential incidence		Renters as a percentage of the entire class
		Market value measure	Consumer's surplus measure	Market value measure	Consumer's surplus measure	
0 - 24	19	-7	-4	-0.001	0.0	87
25 - 35	36	2	5	0.0	0.001	55
36 - 44	13	6	8	0.001	0.001	27
45 - 54	12	2	5	0.0	0.001	22
55 - 65	10	-1	2	0.0	0.0	23
66+	10	-18	-17	-0.005	-0.004	27

an accrual basis. There is however no provision for special treatment of inflation-induced capital gains. The gains (and losses) realized on the sale of certain types of property are exempt from any taxation, most significantly the gains from the sale of the principal residence of a taxpayer.

This exemption was clearly intended by the legislators as a benefit to homeowners. The Carter Commission, from which the 1972 reforms evolved, had advocated the institution of a capital gains tax, with capital gains taxed at full rates and gains from the sale of residential property included, exempting only $25,000 over a lifetime (Canada, 1966). The small exemption was recommended for administrative reasons, not out of a feeling that homeowners deserved special treatment on efficiency or equity grounds. By the time these proposals became law, however, favourable treatment had been granted to gains from the sale of a principal residence.

An analysis of the capital gains exemption must be different than that used thus far in this report for a number of reasons. Previously it has been assumed that there is a perfectly elastic long-run supply curve of housing services and no price appreciation. In such a world there are no long-run capital gains. Programs have been analysed to evaluate their annual value, which presumably would continue to accrue to a household continuing to participate in the program. Benefits were seen as an addition to income. Capital gains on the other hand are realized in one period and represent a change in wealth not income. A fully articulated model was not developed to handle the issue of capital gains; as the main effects under certain assumptions are sketched it should be remembered that this discussion uses different assumptions from those used in analyzing other programs.

The immediate impact of the exemption, before markets have adjusted, is straightforward. Any household that realized a capital gain enjoyed an increase in wealth equal to one-half the capital gain multiplied by the taxpayer's marginal tax rate. This measure is analogous to the market value measure of the exemption for imputed income, which computed the tax collections with no change in prices, housing consumption, tenure, or financing. The increase in wealth was calculated assuming that every homeowner realized a capital gain based on appreciation over one year. The value of the home was obtained from Canada (1972c), and it was assumed that all homes appreciated at the same rate as the average property sold through the Multiple Listing Service in Ontario between 1971 and 1972 (7 per cent). Obviously some households in fact realized no gain because they did not sell their homes, while others realized gains based on several years of price appreciation; but such information was unavailable, so an approximation had to be made. The marginal tax rate was computed from the taxes paid (Canada, 1972c).

This picture of the immediate impact of granting the exemption, of course, does not accurately reflect the final result. Any anticipated capital gains (increases in the price of a house) will be capitalized into the house price. If everyone anticipates that a given house could sell for $70,000 next year, it will obviously sell for something only slightly less than that (the discounted value) this year. Only unanticipated capital gains will accrue to any new purchaser of housing. Even after capitalization the house will appreciate at a rate near the rate of interest, but these gains will be taxed at capital gains rates rather than full rates. This advantage will also be capitalized into the house price until any new homeowner will be indifferent as between investing in housing or elsewhere. The after-tax returns will be the same. The final result of the capital gains exemption is therefore that by owning a house a household obtains insurance against the reduction in wealth caused by unanticipated price increases.[4]

Immediately after the granting of the exemption housing prices would rise rapidly as the benefits are capitalized, to the gain of existing homeowners. Many would argue that it was precisely this adjustment that fuelled the rise in house prices in 1973-4. Similarly, if the exemption were now removed, existing homeowners would suffer capital losses.

The benefits could not be measured as before and therefore have been calculated as the increase in taxes that would have to be paid if proceeds from the sale of a principal residence were not exempted from capital gains taxation. It is assumed that if the exemption were removed the proceeds would be taxable at capital gains rather than full rates. This calculation overstates somewhat the extra tax collections because some of the price appreciation will be due to home improvements, which would be deductible, and certain costs of the sales transaction would be deductible as well.

The average tax increase by income and age is presented in Table 30. The average tax increase is about $355. The tax increase rises with income, and rises and then falls with age.

The average increases computed in this manner could be viewed as an annual benefit rather than an increase in wealth. The benefit is much smaller than from the exemption for imputed income and smaller than from most homeownership programs except the residual lending program. It is however larger than renters' benefits under the depreciation regulations. The small size of the benefits is noteworthy because many commentators seem to imply they are much larger. The capital gains exemption is sometimes alleged to play a central role in the decision about buying a house and regarded as the most important aspect of public policy relating to housing. These results suggest this is not the case.

4 I am indebted to John Bossons for this point.

TABLE 30

Average tax increase on taxable capital gains 1971-2, by income and age

Income ($)	Average tax increase ($)	Age	Average tax increase ($)
0 - 1,999	110	0 - 24	243
2,000 - 3,999	156	25 - 35	325
4,000 - 5,999	205	36 - 44	386
6,000 - 7,999	254	45 - 54	385
8,000 - 9,999	269	55 - 65	330
10,000 - 11,999	314	66+	208
12,000 - 14,999	350		
15,000 - 24,999	496		
25,000+	848		

Deducting mortgage interest

There are many who argue that a response to the problems faced by homeowners in general and especially purchasers of their first home should be to permit the deduction of mortgage interest payments and even property tax payments from taxable income.

The buttressing arguments are varied. Some are simply illogical. It is said that because landlords may deduct mortgage interest payments as an expense in fairness a similar privilege should be granted homeowners. What is not recognized is that landlords must pay tax on income from rental property, whereas owners do not pay tax on the 'income' they receive from renting their homes to themselves. If imputed income were subject to taxation the homeowner would be permitted to deduct mortgage interest payments. But surely they should not have it both ways.

Other arguments are perplexing. The deduction is permitted in other jurisdictions, for example in Britain and the United States, and therefore, it is argued, it should be permitted here, the point presumably being that the proposal is feasible.

Others argue in favour on the grounds of the positive externalities from homeownership. Again one must wonder whether these exist and, if they do, whether deducting mortgage interest represents an appropriate subsidy.

The effects on household choice of allowing a mortgage interest deduction may be analysed in the framework used to examine the imputed income exemption. The effects prove to be very similar (Figure 7). If imputed income were exempt and mortgage interest were deductible, the kinked shape of the owner's budget line would remain. For every quantity of housing services greater than S/P the budget line would be less steep than $C'D$, the owner having a

greater amount of money to spend on the composite commodity equal to the product of mortgage interest paid and his marginal tax rate. For homeowners with a mortgage the deduction would be equivalent to a fall in the price of housing from $P(m+d+t+a)$ to $P(m(1-x)+d+t+a)$ and a fall in income from $Y + Sr$ to $Y + Sr(1-x)$. The budget line rotates about the point C'. The budget line to the left of S/P would remain as AC', because the owner without a mortgage would be unaffected by the new law.[5]

In assessing this policy proposal it is useful to examine the distribution of benefits. The benefits to homeowners of permitting the deduction were calculated using a market value measure, that is as the change in their tax liability. The HIFE 1971 Survey data (Canada, 1972c) were used to find household income, the actual taxes paid (from which x was calculated), the total mortgage principal outstanding M, and the actual rate of interest on the first mortgage $\bar{m}$. The reduced tax liability of a household, should mortgage interest be deductible, was calculated to be $M\bar{m}x$. The results by income and age are presented in Table 31. Again a differential incidence approach was used; the deduction is financed by a tax increase in proportion to income, paid by all homeowners with a mortgage.

Although the fact is hidden by a differential incidence approach, it should be remembered that permitting the deduction of mortgage interest would result in substantial redistribution to households with mortgages from renters and owners without mortgages. The redistribution is not nearly so large as would follow the institution of a tax on imputed income, because the tax monies involved are only one-fifth as large.

The pattern of differential benefits is considerably different than that revealed for the exemption of imputed income. If the tax package were implemented (a mortgage deduction financed by a tax with neutral impact on income distribution), the distribution of benefits among homeowners with mortgages would be neither progressive nor regressive. Low-income households would lose, middle-income households gain, and high-income households lose. The distribution of benefits by age is exactly the reverse of the imputed income provision: the benefits flow mainly to young households, and the losses are borne by the older households.

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5 The described effects would prevail in a world of perfect capital markets. Existing homeowners without mortgages would have little incentive to mortgage their homes to obtain funds for investment. If they wish to make financial investments they can borrow funds and deduct interest costs against income. This opportunity is available with or without the deduction of mortgage interest. However, in actual capital markets there may be barriers to securing loans, and the homeowner will have a small incentive to mortgage his home. Mortgage loans obtained through refinancing might be used to purchase durable goods.

TABLE 31

Distribution by income and age classes of benefits from the deduction for mortgage interest, homeowners with mortgages, Ontario 1971

Income ($)	Benefits ($)	Age	Benefits ($)
0 - 1,999	−11		
2,000 - 3,999	−9	0 - 24	185
4,000 - 5,999	23	25 - 35	95
6,000 - 7,999	34	36 - 44	27
8,000 - 9,999	62	45 - 54	−85
10,000 - 11,999	39	55 - 65	−80
12,000 - 14,999	−26	66+	−40
15,000 - 24,999	−28		
25,000+	−94		

NOTE: Benefits are average differential benefits to homeowners with mortgages.

Allowing households to deduct mortgage interest would no doubt result in some previous renters becoming owners, a change that might yield some positive externalities. The principal effect, however, would be to transfer resources to homeowners with mortgages and to increase their consumption of housing services. The redistribution does not conform to widely held standards of equity, and the increased consumption is unlikely to yield positive externalities. Proposals for the deductibility of mortgage interest seem explicable simply as the attempts of one group of the population to receive a transfer at the expense of another. Should a concern with the ability of low- and middle-income households to purchase housing genuinely exist, a far more effective and less costly program could easily be designed.

Registered Home Ownership Savings Plans

A third subject which is frequently mentioned in discussions of housing policy is the Registered Home Ownership Savings Plan (RHOSP). The RHOSP is a mechanism whereby taxpayers put aside money to be used to purchase a house. Contributions of up to $1000 a year to this savings fund may be deducted from taxable income. A taxpayer is entitled to one RHOSP in his or her lifetime and may contribute to a maximum of $10,000. If the savings (and any interest earned) are withdrawn from the plan and used to purchase a home, the withdrawal is not subject to tax.[6] These provisions have been available since taxation year 1974.

6 The regulations governing the RHOSP are considerably more complex than this discussion suggests. For greater detail see the income tax regulations.

TABLE 32

Distribution by income class of benefits among claimants of the Registered Home
Ownership Savings Plan, Ontario 1975

Taxpayer income ($)	Distribution of claimants (%)	Average differential benefit ($)	Differential incidence	Claimants as a percentage of the entire class
0 - 1,999	1	15	0.018	0.1
2,000 - 3,999	2	−43	−0.014	0.4
4,000 - 5,999	6	−17	−0.003	1.4
6,000 - 7,999	11	14	0.002	2.7
8,000 - 9,999	15	−62	−0.007	4.1
10,000 - 11,999	16	−28	−0.003	5.1
12,000 - 14,999	19	3	0.0	5.4
15,000 - 24,999	23	81	0.004	5.5
25,000+	8	403	0.010	6.9

These income tax regulations were intended to assist households in saving for a home[7] and to increase the rate of savings in general. The assistance provided by a RHOSP is substantial. If the maximum contribution is used and the taxpayer has a marginal tax rate of 25 per cent, the annual tax reduction is $250, which can be viewed as a grant toward the purchase of a house. Over the lifetime of the plan the grant can total over $3200 assuming an annual interest rate of 5 per cent. This illustration should not be taken as a measure of benefit because a tax change of this size (in 1975 there were $365 million in deductions) will have significant price and employment effects.

Nevertheless the main redistributive effect of RHOSPs is to transfer resources from all taxpayers to those who can claim deductions. Obviously these will be higher-income households because they are able to save (Table 32). The tax savings also will tend to be greater for higher-income households because their marginal tax rates are higher.

Following the methodology developed previously, a differential incidence approach is used to measure the benefits, using data from Canada (1977), and the results are presented in Table 32. The differential benefit represents the change if the RHOSP deduction were denied and replaced by a system of cash

7 Originally the provisions permitted the spouse of a taxpayer who owned a house to contribute to a RHOSP. When the spouse had made all possible RHOSP contributions the house could be transfered from taxpayer to spouse. In such a case no new house had been purchased yet the tax saving was realized (and the taxpayer could then open his own RHOSP). This loophole has been closed for taxation year 1978.

grants to existing claimants in proportion to income. Interestingly, this approach reveals that among claimants the RHOSP has a progressive pattern of benefits: lower-income taxpayers would be worse off and higher-income households better off. The apparent anomaly results from the fact that actual marginal tax rates do not rise nearly so rapidly as income. The RHOSP therefore transfers resources generally to upper-income households but is slightly progressive amongst all beneficiaries.

Like so many of the homeownership incentives of the 1970s and most of the income tax provisions, the RHOSP is difficult, indeed probably impossible, to justify on equity grounds. Even if middle class households were felt to be deserving of assistance, a system designed to take account of income could easily have been devised. The best explanation for this program may perhaps be contained in a facetious but revealing description of the operation of the federal bureaucracy offered to me by a friend working in Ottawa. He argued that each department had a constituency whose interests it sought to further. The Department of Finance, which controls tax policy, has as its constituency the upper middle class and seeks to redress the redistributive programs of other departments. The RHOSP, in this view, was designed to transfer resources to upper-income households.

7
Overview and conclusions

The previous three chapters have examined in considerable detail the redistributive impact of the major rental and ownership housing programs and the major provisions of the income tax laws relating to housing. This coverage, however, is far from comprehensive. Many programs with equally direct redistributive impacts have been omitted; many actions of government with less direct, although significant, influences on the distribution of income were ignored; and the methodology adopted meant that many effects of the implementation of the examined programs were not discussed. Nevertheless, from the detailed analysis certain general patterns emerged which can be said with confidence to characterize housing policy in Ontario.

In the following sections the distribution of the benefits of housing policy by income and by age will be summarized, the efficiency of the redistribution examined, and some general criticisms offered of the conduct of our housing policy.

BENEFIT DISTRIBUTION BY INCOME CLASS

The differential incidence methodology adopted in this report compared the benefits of an existing program with those of an alternative of equal cost to the government. The alternative was designed so that while the same households participated in the existing and alternative programs the benefits under the alternative were neutral with respect to income distribution, i.e. benefits were a constant proportion of each household's income. Households regarded the benefits under the alternative as cash transfers. The results of this approach show the changes in income that occur when one program is substituted for another, not the changes that would occur when a program is initiated. This approach does not examine macroeconomic effects, relative price changes, program

externalities, or donor benefits because these may be presumed to be the same under the two programs being compared.

Every program examined was found to be progressive compared to the neutral alternative, using a market value measure. The substitution of a neutral alternative would make participating low-income households worse off and upper-income participating households better off; and the ratio of these changes rises with income. The consumer's surplus measure showed roughly similar results, although most programs appeared less progressive, entrepreneurial and non-profit programs appeared neutral, and the HOME plan slightly regressive. It should be remembered that these conclusions related to progressivity or regressivity amongst beneficiaries of the programs.

That all programs should be progressive is perhaps not surprising because the intention often was to redistribute income. The exemption for imputed income, though, is often felt to be regressive. These results depend on the definition of a neutral alternative. A neutral program was defined as one in which the benefits were the same proportion of income. If such a pattern of benefits were added to income there would be no change in the degree of inequality as measured by the Gini coefficient. But the benefits obviously rise with income, which runs somewhat against our intuition of a neutral transfer system.

Another definition of neutrality discussed in chapter 3 states that a program is neutral if the percentage fall in benefits is equal to the percentage rise in income across income classes. Such a pattern of benefits would characterize a shelter allowance program, a widely advocated form of housing subsidy.[1] The calculations of previous chapters were redone using this second idea of a neutral alternative. The results, presented in summary form in Table 33 can be thought of as representing the changes if a shelter allowance were instituted.

This comparison completely reverses the conclusion: every program is regressive except public housing. Lower-income participants would gain if a shelter allowance were substituted for existing programs. Therefore our housing programs while progressive by one standard are not so progressive as the reform proposal. Recognizing that the housing needs of a household of given size remain constant but the ability to purchase housing rises with income, it seems logical that public assistance should decline with income. By this standard there is clearly a maldistribution of the benefits of Ontario's housing programs.

The presentation of the results thus far has never included a statement of the dollar value to an average household in each income class of participating in the program. Results in this form are frequently seen in incidence studies,

1 Dennis and Fish (1972), Aaron (1972), Ontario Economic Council (1976), and Hayek et al. (1975) recommend the adoption of a shelter allowance.

particularly tax incidence studies, which show the tax paid by an average household in each income class. As suggested in chapter 3, such results can be misinterpreted. Frequently it is concluded that these dollar benefits accrued to a household as a result of the implementation of a program; an implicit comparison is made between a world with and a world without the program. This conclusion is incorrect. The implementation of a program would involve changes to finance it, macroeconomic effects, relative price changes, and benefits to those who voted for the subsidy, which have been ignored.[2] However, if interpreted with caution, results of this form do have some use. They show the dollar value to a *single* household of participating in the program. Alternatively, they can be taken to show the dollar value to households of a marginal increase in the program (an increase so small that all other things can be assumed to remain constant).

With the admonition that they be interpreted carefully, such results are presented in Table 34, which clearly illustrates that although benefits may rise or fall with income the benefits fall as a percentage of income for every program, even the imputed income exemption. Also of note is the fact that the benefits under the recent homeownership programs are extremely generous, much larger than the benefits under the rental programs. This contrasts sharply with the public perception of rental programs as generous welfare giveaways. In reality, the most generous welfare is available to middle- and upper-income homeowners.

These results and the differential incidence findings have focused on households participating in the housing programs. The presumption has been that these are the groups society has decided to assist, and the inquiry was directed at how the benefits were distributed among them. But it is also germane to inquire into the equity of the choice of beneficiaries. Considering housing policy as a whole, there seems to be little justification on equity grounds for the pattern of beneficiaries. Indeed, the approach is best characterized as something-for-everyone: public housing for the poor, the HOME plan for the middle class, and a tax exemption for all. And yet only a small fraction of those eligible actually benefit under the programs. Long before the problems of the neediest have been adequately dealt with, programs are brought forward to assist those

2 Barton and Olsen (1976) present results in this form to represent the implementation of a public housing program. To do this a restrictive set of assumptions was adopted: there are two goods called housing and other goods; all markets are perfectly competitive and in long-run equilibrium; the long-run supply curves are perfectly elastic; information and transportation are costless; and the public housing household is not affected by changes in taxes or other government services. Furthermore, although not stated, all changes in the real incomes of non-participants have been ignored.

TABLE 33

Distribution by income class of benefits among participating households of the substitution of a shelter allowance, Ontario

Income ($)	Public housing		Entrepreneurial and non-profit		Residual lending		HOME plan		AHOP		Imputed income exemption		Rental depreciation provisions	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
0 - 1,999	128	0.074									3548	2.947	335	0.293
2,000 - 3,999	-83	-0.027	94	0.027							1078	0.357	65	0.021
4,000 - 5,999	-32	-0.007	14	0.003	51	0.009	753	0.102	939	0.178	415	0.082	-2	0.0
6,000 - 7,999	51	0.008	-39	-0.006	15	0.002	268	0.029	390	0.053	72	0.010	-33	-0.005
8,000 - 9,999			-64	-0.008	-7	-0.001	117	0.011	108	0.012	-54	-0.006	-50	-0.006
10,000 - 11,999					-27	-0.002	-47	-0.004	-23	-0.002	-242	-0.022	-60	-0.006
12,000 - 14,999					-43	-0.003	-171	-0.010	-153	-0.012	-396	-0.030	-82	-0.006
15,000 - 24,999					-62	-0.004			-271	-0.016	-775	-0.043	-102	-0.006
25,000+											-1613	-0.051	-145	-0.004

NOTE: Column (a) is average differential benefits ($) by the market value measure, and column (b) is differential incidence.

TABLE 34

Distribution by income class of benefits among participating households of a marginal program change, Ontario

Income ($)	Public housing (a)	(b)	Entrepreneurial and non-profit (a)	(b)	Residual lending (a)	(b)	HOME plan (a)	(b)	AHOP (a)	(b)	Imputed income exemption (a)	(b)	Rental depreciation provisions (a)	(b)
0 - 1,999	746	0.431									406	0.337	39	0.034
2,000 - 3,999	572	0.186	173	0.049							504	0.167	44	0.015
4,000 - 5,999	347	0.073	173	0.035	71	0.013			839	0.159	534	0.106	47	0.009
6,000 - 7,999	176	0.026	173	0.025	79	0.011	1478	0.200	890	0.122	600	0.084	50	0.007
8,000 - 9,999			173	0.020	83	0.009	1494	0.160	923	0.101	568	0.063	52	0.006
10,000 - 11,999					87	0.008	1355	0.122	876	0.080	677	0.062	54	0.005
12,000 - 14,999					93	0.007	1274	0.095	864	0.066	752	0.056	60	0.005
15,000 - 24,999					101	0.006	1174	0.072	840	0.051	1052	0.058	66	0.004
25,000+											1771	0.056	81	0.003

NOTE: Column (a) is the average benefit ($) by the market value measure, and column (b) is the ratio of average benefit to average income of participants.

with far more resources. This phenomenon was greatly exacerbated by attempts in the 1970s to meet the complaints of middle-class households seeking to purchase their first home. The proliferation of homeownership programs may make good politics, but it is poor justice. The inequity is compounded within most programs by the fact that the percentage participating of each income class falls as income falls. Even these highly selective programs do not admit the needier more readily.

Thus Ontario housing programs, while progressive amongst beneficiaries, must be harshly criticized for the choice of beneficiaries.

BENEFIT DISTRIBUTION BY AGE CLASS

The normal pattern of income over the life-cycle of a household is to increase until late middle age and then decline through the retirement years. This pattern, long recognized as important in interpreting the income distribution of the society because demographic factors will change the aggregate distribution, is also especially important in the analysis of housing problems. Young families with relatively low incomes have a desire to consume much housing. Elderly persons also have special problems; some have so little income that adequate housing cannot be purchased, and others have experienced such a fall in income that they cannot remain in their homes, although from a personal and social point of view this might be preferable.

A proper analysis of the influence of housing programs on life-cycle incomes requires a dynamic analysis much beyond the scope of this report. Nevertheless a preliminary investigation and a look at how housing programs deal with the special age-specific problems can be provided by considering a distribution of the benefits of housing programs by age. Using a differential incidence framework comparing existing programs with a neutral program benefiting each in the same proportion to income, almost all programs are neutral with respect to the age distribution of income. All age groups benefit in the same proportion to income. The exceptions are the public housing program and the exemption for imputed income, which are of greater benefit to the elderly.

Among beneficiaries all age groups are treated similarly. Differences do arise, however, in the selection of participants. Public housing admits higher percentages of those aged 25 to 44 and over 65. The homeownership programs admit a higher percentage of those aged 25 to 34, and the percentage declines with age. If the concern is with the age distribution of benefits, the programs perform rather well, concentrating ownership assistance on the young and rental assistance on the young and old. Judgment of the income tax laws must be more mixed. The imputed income exemption benefits older homeowners more, and a

higher percentage of older age classes are homeowners, a result in conflict with the objective of assisting the young family, although it reduces the disparity between the middle aged and the elderly.

THE EFFICIENCY OF HOUSING SUBSIDIES

Two procedures are utilized to measure the value of participating in a housing program. The first, a market value measure, established the benefit as the market value of the housing consumed by the participant less the actual payments. The second, a consumer's surplus measure, established the benefit as the income transfer which would leave the household as well off if it had to withdraw from the program and pay the market price for housing. In every case the consumer's surplus measure was less than the market value measure. Participants valued the subsidy less than the cost to the government.[3] The difference results from the fact that most housing programs constrain the household to spend the assistance on housing, and even a simple price reduction subsidy such as the liberal depreciation provisions (Figure 8) can only be enjoyed to the extent that housing is consumed. Households would rather receive somewhat less with no constraints on how the assistance is to be spent.

This difference can be taken as a measure of the inefficiency of the subsidy. It is the extra cost incurred in giving the household the same gain in utility by providing the assistance as a housing program rather than a cash transfer. (This analysis only applies to the case of a single household. It is not a general equilibrium analysis of the initiation of the program − see chapter 3). It may be, however, that the intention of the housing program is not simply to raise the utility of the participants but also to increase their housing consumption, or to make them become homeowners, or even to make them live in a specific place, or to raise the property values in surrounding areas. In order to secure these externalities it may be necessary to utilize a housing program rather than a cash allowance. A correct evaluation of this issue would mean identifying and evaluating the externalities and then seeing whether the benefits to non-participants plus the benefits to participants (the consumer's surplus measure) are equal to the cost of the program (the market value measure). Unfortunately, these externalities have never been satisfactorily identified and measured. The difference between the market value measure and the consumer's surplus

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3 It is assumed that the market value of the housing is equal to the cost of the resources used to produce it. If the government is an inefficient producer of housing the resource cost can exceed the market value and the cost to society of the subsidy will be even greater than the market value measure of benefit (see DeSalvo, 1971).

measure, though, does suggest the minimum value of externalities necessary to justify use of a housing program rather than a cash transfer.

The difference between the market value and consumer's surplus measures varied dramatically by program, both in absolute size and in the fraction of program cost to taxpayers (the market value measure). There was no pattern to the difference by income class. The largest differences were associated with the homeownership programs; in some income classes the difference was over $1000 and as much as 80 percent of program cost. In such cases the inefficiency is incontestable. The difference is far larger than any realistic estimate of the externalities. That society should so over-react to the problems of middle-income families that a subsidy is offered that costs over $1000 more than its value to the recipient is testifies to the value we seem to place on homeownership. The difference was considerably less for the rental programs, averaging about $100 or slightly more than 35 per cent of program cost. Again this points to inefficiency. Interestingly, the tax provisions are the most efficient forms of subsidy. The difference is under 15 per cent of cost for the imputed income exemption and less than 5 per cent for the liberal depreciation provisions.

These results seem at first somewhat surprising but on reflection are logically appealing. The distorting effects of price reduction subsidies have received much attention, but because the household can still choose the quantity to be consumed, the effects are far less than under the restricted choices offered by most housing programs. Also, the imputed income exemption was shown to be an efficient transfer for owners with mortgages. The severe constraints on the choices available to public housing tenants might suggest a most inefficient program; but in reality the extra housing and other goods offered housing tenants resembles quite closely how they would have spent an increase in income. They would have spent much of any increase on housing anyway. The greatest distortion occurs in the ownership programs. Not only are these programs hard to justify on equity grounds but they are also inefficient. Current government restraint in this area seems well justified.

CONCLUDING REMARKS

In the conduct of this research it became abundantly clear that there was a lack of even basic program assessment within the bureaucracies of the federal and provincial governments. The effects on prices and housing markets of initiating a program were almost never examined. There was no systematic recording of the income and other characteristics of those who participated in the housing programs. Usually the necessary information had been gathered but it had not

been collated in a usable form. Even when programs were examined the benefits to participants were not measured with any care; generally the measure of benefit was simply the government's cash outlay. There was no attempt to evaluate the generous terms on which government mortgages were made; government land was valued at acquisition cost rather than market value; there was no attempt to measure the value of the subsidies from the participants' viewpoint; there was no attempt to identify or measure externalities; there was no attempt to measure the market value of the housing which was produced; and the costs of income tax exemptions were ignored completely.

This lack cannot simply be remedied by the addition of a few program evaluation officers; it is inherent in the entire approach to policy formulation in the housing bureaucracy. There is elaborate monitoring of the expenditure of money and huge volumes of data are collected on the loans approved or the numbers of housing units involved in the programs. Attention is focused on the process of implementing the program, and output is measured by how many units are processed. But any evaluation done is improvised and unsystematic and seldom a formal part of the decision process. On several occasions requests for data on programs that, though still operational, had recently changed marginally were met with puzzled and somewhat irritated queries about why the information was needed because everything had changed now.

In such an environment it is not surprising to find that housing policy zigzagged as it did during the 1970s. It would be neither difficult nor costly to produce a statement of who benefits, what these benefits are worth, and whether their distribution meets our standards. Such information is as basic for an informed citizenry as a statement of expenditures in the public accounts. Only through such statements — perhaps they should be called 'social audits' — can we have a 'bottom line' to evaluate the actions of government.

Moreover, the development of our housing policy never seemed to reflect an integrated, coherent view of all the programs; the equity of the total package was not examined. A something-for-everyone approach was adopted, with new initiatives mounted for high-income households before even a small fraction of the problems of poorer households had been dealt with. The programs were usually progressive within themselves, but the level of assistance bore no relationship to what was available to other groups. It would be naïve to argue that this was the result of poor policy analysis. Subsidies to middle-income homebuyers are popular with the majority coalition that supports most governments. Such assistance will probably always be available, even recognizing the current trend to curtail ownership programs, in spite of any complaints on equity grounds. Nevertheless, if it were widely recognized how little our

apparently redistributive programs actually assist lower-income households, there could well be support for further redistribution.

Finally, our housing policy has been changed far too often. The programs have been needlessly complex; most could have achieved the same results much more simply. The bewildering array of changes in the 1970s was not warranted to deal with the problems of the day, reflecting rather a confusion about the appropriate response instead of a strong and continuing commitment. In future, changes should be fewer, and they should always simplify the operation of a program.

The past decade has seen an expansion of government activity in the housing sphere with particular attention to the plight of the middle-income household, particularly the homebuyer, supplanting the concern of the 1960s with the lower-income household. This evolution has now been curtailed, in part because the rise in house prices has slowed and in part because of general restraints on government activity. Now we seem to be in process of re-establishing our priorities and policies. The next decade will probably see concern with the two main problems of the past. Low-income households, especially single-parent families and the elderly, will require assistance to obtain adequate housing. Middle-income families will have difficulty buying their first homes as the children of the baby boom enter the housing market. The experience of the last twenty years shows that redistributive housing programs should deal only with the former, while the latter can be met with attempts to ensure the smooth functioning of the private market.

Housing programs in Ontario

There are many other housing programs operating in Ontario in addition to those examined above. Some were mentioned in chapter 2 in connection with the history of Canadian housing policy, but most were not. These programs offer financial aid in a variety of forms to assist such things as construction of rental housing, neighbourhood improvement, housing rehabilitation, municipal land assembly, the preparation of community plans, and sewage treatment. Many of the programs are extremely small and deal with the special problems of a small group or geographic area.

This appendix describes the assistance available under those programs which have not been dealt with in the text. Where possible, some measure of recent activity under the program is presented. In parentheses after the program's title are listed the year of commencement and the levels of government providing assistance. The listing is quite comprehensive, although it is impossible to be completely current and some programs may be inoperative. Certain retired programs are included to show the great diversity in the forms of assistance. The programs proposed in the federal announcements of May 1978 have not been included.

ASSISTED RENTAL PROGRAM, PRIVATE (1975, FEDERAL)

Loan and grant assistance is available to contractors to aid in constructing new, moderately priced rental housing units. Loans of up to $1200 per unit a year are utilized to reduce rents (required by high development costs) to the existing market rents of similar accommodation. The actual loan value is determined by the number of rental units, construction costs, the mortgage interest rates, operating costs, and the average rents for similar accommodation in the proposed construction area. The loan is interest-free for the greater of ten years

or the term of the assistance, which can be up to fifteen years. The loan must be repaid by the end of the amortization period of the first mortgage or upon resale or refinancing of the project.

Expenditures — 1976 ($000)

| | Loans by approved lenders | | Federal subsidies |
	Number	Amounts	
Canada	579	582,439	1,123
Ontario	69	110,055	72

SOURCE: CMHC (1977a). Data are gross.

RENT SUPPLEMENT PROGRAM
(1971, FEDERAL, PROVINCIAL, MUNICIPAL)

The private sector is eligible for assistance to enable it to increase the supply of assisted rental housing for low-income families and senior citizens. Landlords sign a five-year contract with OHC to rent from 1 to 25 per cent of their units at an agreed-upon market rental rate. The contract allows for annual renegotiation of the market rent. Tenants, chosen by OHC and the landlord from assisted rental housing waiting lists (public housing), lease the housing unit directly from the landlord and pay a rent geared to their income. As in the public housing program, rents for fully serviced accommodations range from 16.7 to 25 per cent of adjusted gross family income (20 to 25 per cent for senior citizens). The rent charged to recipients of general welfare and family benefits assistance is equal to the shelter allowance component incorporated into the family's assistance. The difference between the market rents and actual rents paid the landlord is subsidized by the three levels of government, with the federal, provincial, and municipal governments contributing 50, 42½, and 7½ per cent respectively.

Expenditures — 1976

Ontario	
OHC's share	$3.5 million

SOURCE: Ontario (1977e)

ONTARIO RENTAL CONSTRUCTION GRANT
(1977, PROVINCIAL)

If, after federal assistance under ARP, the housing still cannot be rented at low rents, the builder is eligible for a grant of up to $600 a unit.

PRIVATE ASSISTED RENTAL PROGRAM
(1976, FEDERAL, PROVINCIAL, MUNICIPAL)

Owners of privately financed, built, and managed housing may take tenants from the local waiting list for assisted rental accommodation. Under an agreement with OHC, tenants pay rents geared to their incomes, and the difference between market rent and rent paid is covered as under the Rent Supplement Program. Agreements are for a minimum of fifteen and a maximum of thirty-five years.

MODIFIED FEDERAL/PROVINCIAL RENTAL HOUSING
(1965, REVISED 1974, FEDERAL, PROVINCIAL, MUNICIPAL)

For the construction and management of rental accommodation for low- and moderate-income families, the federal government, through CMHC, will contribute 75 per cent of the capital cost of the project and share in 75 per cent of any operating loss. The provincial government, through OHC, will contribute 25 per cent of the capital cost and be responsible for 17½ per cent of any operating loss. The municipal government is responsible for 7½ per cent of any operating loss. The developers are required to reserve 25 per cent of their rental units for families eligible for public housing on a rent-geared-to-income basis. The remaining units are leased at rents ranging up to market levels to persons in specified moderate-income ranges. A developer has the option of remaining as the owner of the proposed site or selling the site to OHC and building on it under contract with OHC.

Expenditures — 1976 ($ millions)

Ontario	
Rental revenue	7.8
Expenses	17.7
Loss	9.9
CMHC's and municipalities' share of loss	8.0
OHC's share of loss	1.9

SOURCE: Ontario (1977e)

COMMUNITY-SPONSORED HOUSING PROGRAM
(1974, PROVINCIAL)

In addition to federal assistance available to non-profit groups, a provincial rent reduction grant is available if units are made available to households eligible for rent supplement. The grant is paid over a fifteen-year period on a declining scale. The usual rent reduction is $20 to $35 per unit a month in the first year. The rent supplement is also available.

STUDENT HOUSING (1966, FEDERAL, PROVINCIAL)

Various education-related groups are eligible for assistance to increase the supply of rental accommodation available to both on- and off-campus students. Funds to assist in the construction or conversion of housing for students are made available to provincially assisted universities and other post-secondary educational institutions, including colleges, hospitals, school-boards, co-ops, and student non-profit corporations. Building sites cannot be purchased using these funds and must be provided by the educational institution involved. The development and construction phase of a project is administered by the Ontario Student Housing Corporation (OSHC). On-campus projects are managed by the educational institution, while off-campus projects are managed by OHC. The federal government, through CMHC, lends the educational institution 90 per cent of the capital cost of the development, with the provincial government supplying the remaining 10 per cent. Municipalities are responsible for any zoning amendments that may be required.

Expenditures — 1976

There were no additions to the number of student housing units in 1976. Since 1974 the number of units (beds) has remained at 12,218, serving twelve universities and colleges in Ontario.
In 1976 the Ontario Student Housing Corporation reported net revenues of $4,869,295, net expenses of $4,982,236, and a net operating loss of $112,941.

SOURCE: Ontario (1977e)

PREFERRED LENDING PROGRAM (1973, PROVINCIAL)

Depending on the availability of funds, Ontario provides loans at below-market rates to builders and developers of semidetached housing, townhouses, or condominiums to be sold to moderate-income families.

HOME IMPROVEMENT LOANS (1955, FEDERAL)

Assistance is available to homeowners and landlords making permanent repairs, alterations, or additions to existing homes and apartments. CMHC provides a limited loan guarantee to banks and approved installment credit agencies in return for an insurance fee (approximately 1 per cent) paid by the borrower. The maximum amount for an improvement loan for a single-family dwelling is $4000. For the first unit of a multiple-family dwelling the maximum loan is $4000, and it is $1500 for each additional unit. Repayment of the loan and interest may be extended over a ten-year period. (See also Tables 1 and 2.)

Expenditures — 1976

	Number of loans	Units	Loan value ($000)
Ontario	730	911	2,242
Canada	3,347	4,972	10,588

SOURCE: CMHC (1977a, 25; 1976a, 25)

DEPARTMENT OF VETERANS AFFAIRS HOUSING
PROGRAM FOR VETERANS (1975, FEDERAL)

The Department of Veterans Affairs offers additional assistance to veterans qualifying for CMHC housing assistance. Veterans are eligible for a grant of up to $600 annually for five years for the purchase or construction of a new dwelling, if, after direct AHOP or private additional assistance is taken into account, the portion of the veteran's gross family income required for payments of principal, interest, and taxes is still greater than 25 per cent of that income. A grant of up to $600 annually for five years is available if the veteran obtains a loan or assumes an existing mortgage from CMHC or an NHA-approved lender for the purchase of an existing house, priced within the limits established by CMHC for the area. Restrictions on this grant dictate that the grant must be no greater than the amount required to reduce the payment of principal, interest, and taxes to 25 per cent of the veteran's gross family income, and that the veteran must not have owned a house in the previous three years. In addition, non-profit organizations obtaining mortgage assistance under the Non-Profit Housing Assistance Program (Section 51) can obtain additional grants covering 10 per cent of the capital costs incurred to develop low-rental housing projects intended primarily but not exclusively for veterans.

WIGWAMEN INCORPORATED (1973, FEDERAL,
PROVINCIAL, MUNICIPAL)

Wigwamen Incorporated, a private non-profit organization, assists Canadian native people in obtaining rental housing in Metropolitan Toronto. Wigwamen is involved in two programs to achieve this housing goal. Housing units purchased by Wigwamen for use as rental accommodation are financed by the federal government. Wigwamen is responsible for tenant selection and housing administration. In addition, OHC participates with Wigwamen in a joint committee to select tenants for units that are made available under the Rent Supplement Program. Under a rent supplement agreement, selected tenants pay landlords a negotiated rental rate. The difference between this rent and the market rate for the housing unit is subsidized by the three levels of government. Federal, provincial, and Metro Toronto governments subsidize the operating deficit incurred in the amount of 50, 42½, and 7½ per cent respectively (see Rent Supplement Program).

THE ELDERLY PERSONS HOUSING AID ACT
(1970, PROVINCIAL)

This program aids the construction of both private and municipal senior citizen rental accommodations by providing assistance in the form of capital grants. Charitable organizations or any limited-dividend housing corporation incorporated by or on behalf of a municipality that has obtained a National Housing Act loan for senior citizens' housing can claim financial assistance. Grants are restricted to those developments that offer low-rent accommodations. OHC, which administers this program, contributes either a capital grant of $500 per dwelling unit or 50 per cent of the difference between the amount of the National Housing Act loan and the capital cost of the project.

Expenditures — fiscal year 1976-7

Grants	$318,500

SOURCE: Ontario (1977f)

FEDERAL/PROVINCIAL RURAL HOUSING PROGRAM
(1974, FEDERAL, PROVINCIAL)

CMHC provides housing assistance to low-income families through community and co-operative organizations in non-urban areas with populations of less than

2500 persons. The goal of this program is the provision of better housing to rural Canadians, with their involvement in all stages of planning, construction, and management. For home rehabilitation under the Residential Rehabilitation Program or emergency repair grants and for homes purchased under the AHOP plan, CMHC subsidizes 100 per cent of the costs incurred. CMHC also finances 75 per cent of an ownership-geared-to-income plan available to individuals and families with an annual income of $6000 or less. OHC subsidizes the remaining 25 per cent of the cost of the plan, which was designed to provide an operating subsidy for principal, interest, and tax payments. To ensure that development plans become operational, both CMHC and OHC provide technical assistance to the housing organizations.

Expenditures — 1976

Canada	
Federal loan commitments	$59.5 million for the construction, acquisition, and rehabilitation of 5241 dwelling units
Federal grant commitments	$3.8 million for the training of housing organizations and provision of technical services

SOURCE: CMHC (1976b)

NORTHERN ONTARIO ASSISTANCE IN HOUSING
(1973, FEDERAL, PROVINCIAL, MUNICIPAL)

The Ontario Housing Corporation constructs and manages public housing units in Northern Ontario communities. This rental accommodation is intended for low-income families and the elderly, with priority given to aiding Métis and non-status Indians. Housing is allocated on the basis of need as determined by an OHC point rating system for northern residents. Rental rates are geared to the income of the tenants. The federal government, through CMHC, provides a loan to OHC equal to 90 per cent of the capital cost of the project. It also shares in 50 per cent of the annual operating loss. OHC borrows an additional 10 per cent from the province to cover the remaining capital costs incurred. OHC subsidizes 50 per cent of the operating deficit if the proposed project is located in an unorganized community, 42½ per cent if it is located in an organized one. An organized municipality is responsible for 7½ per cent of the operating loss.

ONTARIO HOME BUYERS GRANT (BEGUN
APRIL 1975, ENDED DECEMBER 1975, PROVINCIAL)

Ontario residents who purchased or built their first residence in Ontario between 8 April and 31 December 1975 and occupied it before 30 June 1976 were eligible for a $1500 grant. Grants were applicable to both new and resale housing units. Upon occupying the housing unit as their principal residence, the buyers could apply for an initial $1000 installment. If the homeowner continued to reside in the dwelling unit, he could apply for additional grants of $250 in each of the next two years. The dwelling unit had to be the first unit owned and occupied in Ontario or elsewhere by the applicant, applicant's spouse, co-owner, or co-owner's spouse. Eligible housing units for one-family occupancy included a house containing not more than two housing units, a condominium unit, a co-operative housing corporation unit, or a mobile home unit (meeting CSA standards). No minimum or maximum price qualifications were placed on the units purchased.

Expenditures — Fiscal year 1976-7

Grants to first-time buyers of new and existing housing	$23.7 million

SOURCE: Ontario (1977f)

RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM
(1973, FEDERAL)

RRAP provides assistance to homeowners and landlords to extend the economic life of their dwelling an additional fifteen years. Loans are available to improve the structural, electrical, plumbing, and heating condition of their housing units in urban areas designated for Neighbourhood Improvement Program and special RRAP projects. Homeowners with adjusted family income (i.e. gross family income minus deductions for spousal earnings, work-related commuting expenses, and dependent children) up to $6000 are eligible for the maximum loan and loan forgiveness amounts of $10,000 and $3750 respectively. As incomes increase to $11,000, the amount of loan forgiveness decreases. The loan forgiveness is earned at the rate of $750 for each year the dwelling continues to be occupied by the homeowner. Homeowners with incomes over $11,000 must repay their loans in full. Homeowners with adjusted family incomes less than $11,000 are also eligible for interest-reduction grants. Landlords agreeing with CMHC on rent limitations and who do not occupy the units involved are eligible

for the same loan and grant arrangements for each family housing unit. Non-profit housing corporations and co-operatives are eligible for assistance (loans and interest reduction grants) for rehabilitation purposes and for the conversion of residential buildings into family housing, hostel or dormitory-type units. As in the case of landlords, the housing units can only be sold with CMHC consent.

Expenditures − 1976 ($000)

Federal loan contribution	
Ontario	12,244
Canada	58,534

SOURCE: CMHC (1976a; 1975a)

NEIGHBOURHOOD IMPROVEMENT PROGRAM
(1971, FEDERAL, PROVINCIAL, MUNICIPAL)

Municipalities can apply for grants and loans to improve social and municipal services and public utilities in deteriorating residential neighbourhoods. The NIP program aims at integrating neighbourhood rehabilitation programs with the Residential Rehabilitation Assistance Program's funding of private home reconditioning projects. Neighbourhoods eligible for assistance are those whose housing stock and social and recreational facilities are in need of repair and improvement to comply with minimum standards. Assistance is available to select neighbourhoods and create redevelopment plans, to acquire land for and to construct social and recreational facilities, to acquire and clear land for low- and moderate-income housing, and to relocate persons displaced due to neighbourhood improvements. Federal, provincial, and municipal governments subsidize the cost of these projects in the respective shares of 50, 25, and 25 per cent (municipalities may borrow from CMHC 75 per cent of their share). Additional shared-cost grants are available to municipalities to improve both public utilities and existing commercial establishments in rehabilitated neighbourhoods.

Federal expenditures − 1976 ($000)

	Loan value	Grant value
Ontario	12	15,330
Canada	18,832	49,430

SOURCE: CMHC (1976a; 1975a)

HOME OWNER GRANTS (BEGUN NOVEMBER 1974, ENDED DECEMBER 1975, FEDERAL)

First-time home buyers in Canada were eligible for a grant of $500 if they assumed occupancy of their newly constructed principal residence between 1 November 1974 and 31 October 1975. The dwelling unit, purchased by eligible buyers over 18 years of age, had to be the first unit owned and occupied in Canada or elsewhere by the applicant, applicant's spouse, co-owner, or co-owner's spouse. Eligible homes for one-family occupancy were those newly constructed units which conformed to CMHC-determined price limits for each market area. Those eligible included a house, a condominium unit, a co-operative housing unit, or a mobile home (meeting CSA standards). If the housing was constructed on leased land, the term of the lease had to be a minimum of five years.

Expenditures ($000)

	1975	1976
Ontario	11,254	1,536
Canada	36,713	6,699

SOURCE: Ontario Regional Office of CMHC.

ONTARIO HOME RENEWAL PROGRAM (1974, PROVINCIAL)

OHRP extends the benefits of the Residential Rehabilitation Assistance Program and the Neighbourhood Improvement Program to owner-occupants in communities not qualifying for assistance under these programs. Assistance is available to improve substandard housing conditions, to augment or repay loans granted under RRAP, and in selected situations to finance neighbourhood block improvements in residential areas not eligible for federal aid. Municipalities eligible for per capital OHRP grants are responsible for administering loans and/or grants to homeowners and for home inspections. Loans up to $7500 (less any federal financing) are allocated by the municipality to owner-occupants whose adjusted annual incomes are $12,500 or less. Adjusted income equals gross family income minus deductions for spousal earnings, work-related commuting expenses, and dependent children and parents. Interest rates on repayable loans are geared to the adjusted income of the homeowner. Interest rates range from zero for families with adjusted incomes under $3000 to 8 per cent for families with incomes greater than $8000. As the loans are repaid the municipalities

retain the capital and interest payments. For homeowners with adjusted incomes of $6000 or less, the maximum grant with no RRAP funding is $4000, and $1500 with RRAP funding of $2500. Homeowners earn the grant portion of their OHRP loan by occupying their residence for a period of time determined by dividing the grant value by the amount of annual earned forgiveness — $250 for RRAP recipients or $600 for non-RRAP recipients. Changes in ownership or occupancy status result in the repayment of all loans, interest, and grants outstanding.

On an experimental basis, partially forgiveable loans of up to $10,000 per unit are available to landlords of rental premises occupied primarily by low- or moderate-income tenants.

Expenditures — fiscal year 1976-7

356 municipalities in Ontario received grants totalling	$18.1 million

SOURCE: Ontario (1977e)

COMMUNITY PLANNING STUDY GRANTS
(1975, PROVINCIAL)

Grants and technical support from the Ministry of Housing are available to rural and small municipalities (population of 10,000 or less) to upgrade local planning departments. The assistance is utilized to prepare and update official development plans and zoning by-laws and to initiate additional planning studies. In addition, grants are available to assist regional, county, or district governments in preparing land severance policies and to assist in planning programs for unorganized territories.

Expenditures — fiscal year 1976-7

226 studies were commissioned in Ontario at a cost of $1.2 million. These studies consisted of:
    4 preliminary planning studies
    6 interim planning documents
    84 official plan documents
    106 zoning by-law documents
    26 special planning documents

SOURCE: Ontario (1977e; 1977f)

ONTARIO HOUSING ACTION PROGRAM (1973, PROVINCIAL)

OHAP was instituted to accelerate the supply of serviced lots and/or housing units for low- and moderate-income families in selected high-growth areas. Designated for OHAP activity were the regional municipalities of Durham, Haldimand-Norfolk, Halton, Hamilton-Wentworth, Metro Toronto, Ottawa-Carleton, Peel, and York, and the cities of Sault Ste Marie, Thunder Bay, and Sarnia. To facilitate housing production OHAP provided housing study grants (up to $100,000) and regional co-ordination offices to ensure that development proposals, zoning modifications, and land servicing agreements would be ratified quickly by the municipalities. In return for an OHAP agreement, municipalities received interest-free loans for local land servicing and per-unit grants ($450-$600) to offset partially the costs incurred in accelerating housing development. Mortgage assistance was available from CMHC for every unit built under the OHAP agreement priced for purchasers with family incomes below $20,000. In addition, moderate-income purchasers of OHAP units built before 31 March 1976 were eligible for mortgage interest subsidies which maintained the mortgage interest rate at 10 1/4 per cent. Under an OHAP agreement, developers were required to sell 10 per cent of their lots to the province for use in the HOME plan (for families with incomes up to $17,200) and to designate an additional 30 per cent of their lots for moderate-cost housing available to purchasers with incomes up to $22,800.

Expenditures — fiscal year 1976-7 ($000)

Municipal housing study grants	1,069
Interest-free loans	12,284
Capital housing incentive grants	10,792
Mortgage interest subsidies	2,490

SOURCE: Ontario (1977e)

MUNICIPAL INFRASTRUCTURE PROGRAM
(1961, REVISED 1975, FEDERAL)

CMHC provides financial assistance to municipalities to combat water and soil pollution by constructing sewage treatment plants, trunk collector sewers, trunk storm sewers, and water supply projects. Loans for up to two-thirds of the cost of a project are available at preferred interest rates. Upon satisfactory completion of a project, 25 per cent of the principal of the loan plus accrued interest is forgiven. When the costs of the development and construction of sewage treat-

ment projects place too great a financial burden on local taxpayers, municipalities can apply for assistance in the form of grants. CMHC will subsidize 50 per cent of the cost of preparation of sewage treatment plans and 50 per cent of the cost of a sewage treatment project that exceeds the budgeted per capita cost. In addition, sewage treatment and water projects eligible for CMHC loans but financed elsewhere can apply for grants equal to the forgivable portion of the loan.

Expenditures – 1976 ($000)

	Loans			Grants for non-NHA-financed projects		High cost grants	
	Number	Amount	Federal forgiveness	Number	Amount	Number	Amount
Canada	474	302,694	75,673	236	23,918	82	19,076
Ontario	119	110,321	27,580	75	9,002	21	6,300

SOURCE: CMHC (1976a)

DOWNTOWN REVITALIZATION PROGRAM (1976, PROVINCIAL)

Subject to the availability of funds, partially recoverable loans of up to two-thirds of the approved cost of a downtown revitalization project are available to municipalities with up to 125,000 inhabitants.

MUNICIPAL INCENTIVE GRANTS (1975, FEDERAL)

Municipalities are offered a grant of $1000 for each new dwelling unit meeting certain density and size requirements and priced below the limit set for AHOP in that area. The dwellings can be for rent or sale and must be connected to municipal services.

Expenditures ($000)

	1976	1977
Canada	2,402	35,683
Ontario	937	9,175

SOURCE: CMHC (1977a; 1976a)

MUNICIPAL LAND DEVELOPMENT (1974, FEDERAL, PROVINCIAL, MUNICIPAL)

Municipalities are eligible for assistance to assemble and/or service land for housing development in accordance with municipal and provincial housing objectives. Land acquired under this program may be leased or sold. Federal government loans cover 90 per cent of the capital costs of the project, which may include land acquisition, planning, development, servicing, and marketing. Federal loans relating to land sold are amortized over a twenty-five-year period, fifty years if the land is leased. Repayment of the principal is deferrable until revenues are produced. Interest payments may be deferred for three years or until revenues are produced, depending upon which comes first. The provincial government, in conjunction with its Municipal Housing Policy Statements Program, provides assistance in the selection, review and processing of land suitable for the development needs of the municipality. The province is also responsible for allocating federal financing to the applicant municipalities. Before they can proceed to service or develop land for housing, municipalities must have their housing policy statements ratified. The remainder of the capital cost funding (10 per cent) is provided by the municipalities.

Expenditures — 1976: Loans for land acquisition

| | Loans by CMHC | | Acres held for future development | Areas developed | |
	Number	Value ($000)		Lots	Acres
Ontario	14	19,197	56	963	555
Canada	94	62,063	1,981	4,248	2,254

SOURCE: CMHC (1975a; 1976a)

MUNICIPAL HOUSING POLICY STATEMENTS (JULY 1974, PROVINCIAL)

Regional and non-regional municipalities are eligible for Ministry of Housing assistance to finance the preparation of municipal housing policy statements. The studies are designed to analyse housing stocks, land-use plans, and future housing demand. Formulated guidelines would indicate both the housing goals

and recipient low- and moderate-income families and the specific housing programs which would be utilized. These guidelines on future housing developments must be consistent with provincial housing objectives. Grant levels have been established according to municipal size. Municipalities with a population of less than 10,000 may apply for a grant of $5000, or at a nominal cost request the Ministry of Housing to perform the study on its behalf. The size classifications and grant levels are as follows:

Regional municipalities	$30,000
Urban centres of 100,000+	$20,000
Urban centres of 50-100,000	$15,000
Urban centres of 30-50,000	$10,000
Urban centres of 10-30,000	$ 7,500

Expenditures — fiscal year 1976-7

	Number of grants	Value ($000)
Grant commitments	56	680.6

SOURCE: Ontario (1977e)

NEW COMMUNITIES PROGRAM (1973, FEDERAL)

CMHC provides financial and technical assistance to the provinces to design and develop new urban communities. A designated provincial development agency is responsible for the planning and development of the project. Two alternative funding plans are available to the provinces. Under a CMHC-provincial cost-sharing agreement, CMHC's share of the total capital costs and profits and losses associated with the project is not to exceed 75 per cent. A CMHC loan agreement with the provincial development agency entails a twenty-five-year loan of 90 per cent of the costs incurred in land acquisition, community planning, and the design and installation of public services. Up to 50 per cent of the loan covering the acquisition of land reserved for recreational uses may be forgiven if recreational facilities are developed rapidly. Furthermore, 50 per cent of the loan covering initial planning costs (e.g. expenses of the development corporation, site research, and development plans, etc.) may also be forgiven. The agreements also include CMHC technical assistance for land planning, development, and servicing.

NEW TOWNS: THE NORTH PICKERING PROJECT AND THE
TOWNSEND COMMUNITY DEVELOPMENT PROGRAM
(NORTH PICKERING 1972, PROVINCIAL; TOWNSEND 1975,
PROVINCIAL)

The Ministry of Housing has initiated the construction of two new towns, North Pickering and Townsend, based on development plans designed to provide a balance of residential, industrial, commercial, recreational, and agricultural uses. The North Pickering Development Corporation and the Townsend Community Development Corporation were responsible for the preparation of development plans under policy guidelines and land-use regulations set forth by the Ministry of Housing. Upon the government's acceptance of the plans the development corporations were in charge of managing their implementation and amendments to them affecting the towns themselves and neighbouring municipalities. The North Pickering community is situated on a 25,200 acre site eighteen miles northeast of Metro Toronto. It is comprised of a 6800 acre urban community, a 10,400 acre agricultural area, and 8000 acres of open space reserved for transportation, utilities, agriculture, and recreation. The Townsend community is located on a 14,000 acre site near Lake Erie in the Regional Municipality of Haldimand - Norfolk.

Expenditures — fiscal year 1976-7 ($)

North Pickering	
Expenditures on salaries and benefits, transportation and communications, services, supplies, and equipment	1,409,080
Advances to the North Pickering Development Corporation	935,402
	2,344,482
Less: Recoveries	961,158
Total	1,383,324
Townsend	
Expenditures on salaries and benefits, transportation and communication, services, supplies, and equipment	1,351,898

SOURCE: Ontario (1977f)
NOTE: These expenditures do not include any land acquisition, which was undertaken in previous years.

COMMUNITY RESOURCE ORGANIZATION PROGRAM (CROP) (1973, FEDERAL)

Grants are available to groups providing technical and managerial assistance to low-income families and community groups involved in non-profit and co-operative housing ventures. Government grants are to be replaced with any consultant income earned. CROP grants extend over a one-year period and are to be reviewed annually for renewal.

SECTOR SUPPORT PROGRAM (1977, PROVINCIAL)

Provincial funding is available in addition to that available under CROP. Funding is contingent on approval of the applicant by CMHC, and the maximum provincial share is equal to the amount approved by CMHC.

DEVELOPMENT AND DEMONSTRATION PROGRAM (1974, FEDERAL)

The purpose of this CMHC program is to investigate and test methods of improving existing housing facilities and community designs. The development section is responsible for identifying and developing housing and planning concepts that will lead to new policies and programs. Projects undertaken include studying human settlement in urban and rural centres, analysing and testing technological improvements in building materials, energy systems, and construction methods, and developing efficient land use projects for existing urban areas. These projects involve not primarily research but the application of existing knowledge, experience, and technology. The demonstration section is responsible for implementing and analysing new programs and policies designed to construct new forms of communities containing housing affordable to most Canadians. This task involves encouraging both the private and the public sectors to initiate the design and testing of innovative ideas. The demonstration section also recommends to CMHC the budget and legislation needed to support ongoing, innovative research.

Expenditures — 1976

$1.5 million was allocated under Part V of the NHA in Canada.

SOURCE: CMHC (1976b)

HOUSING RESEARCH AND COMMUNITY PLANNING (1946, REVISED 1973, FEDERAL)

This program finances investigations by research groups into housing conditions both inside and outside Canada. This research is aimed at the development of policies, programs, and technological innovations which can be utilized to improve existing housing conditions. Grants are available to explore the difficulties involved in delivering non-profit, co-operative and public housing. This involves analysing the economic factors influencing the design and planning of low-cost housing and investigating land utilization and community planning practices in Canada. Emphasis is placed on implementing more effective means of distributing new information to municipalities and provinces desirous of improving their housing conditions. This program also subsidizes experimental projects undertaken jointly by CMHC and any municipality, province, educational institution, or person that may lead to the implementation of innovative community-based housing developments.

APPENDIX B: SOURCES FOR TABLES 1, 2, AND 3

Program	Canada (data are net)	Ontario (data are gross)
Residual Lending	Calculated as loans for new and existing housing under Sections 58, 59, and 34.15 (CMHC 1976a, Table 33) minus loans approved under Section 34.15 (AHOP).	CMHC correspondence (data are net)
Assisted Home Ownership Program (AHOP)	CMHC correspondence (1973 data cover the period June to December)	CMHC correspondence (data are net)
Federal-Provincial Housing (Public Housing)	CMHC (1976a, Tables 56 and 59) — new and existing housing	CMHC (various years)
Limited-Dividend	CMHC (1976a, Table 54) — new and existing housing	CMHC (various years)
Student Housing	CMHC (1976a, Table 60) — new and existing housing	CMHC (various years)
Non-Profit and Co-operative Housing	Non-profit (new and existing) 1972-6 : CMHC (1977a, Table 55) 1966-71: CMHC (1976a, Table 55) 1965 : CMHC (1975a, Table 53) Co-operative (new and existing) 1976: CMHC (1977a, Table 55) 1975: CMHC (1976a, Table 55) 1973-4: CMHC (1975a, Table 53) — 1973 data cover the period June to December	Calculated by subtracting aggregate total in one year from the subsequent year: CMHC (various years)

APPENDIX B (cont'd.)

Program	Canada (data are net)	Ontario (data are gross)
Urban Renewal	1970-3 : Calculated by subtracting aggregate total in one year from the subsequent year CMHC (various years) 1965-9 : CMHC (various years) 1954-64: CMHC (1964a, Table 55)	1971: Calculated by subtracting aggregate subsequent year; CMHC (various years) 1965-70: CMHC (various years)
Sewage Treatment	1975-6 : CMHC (1977a, Table 68) 1972-4 : CMHC (1976a, Table 65) 1961-71: CMHC (various years	CMHC (various years)
Insured loans by private lenders	1957-76: CMHC (1977a, Table 33) 1954-6 : CMHC (1965a, Table 24)	—
Home improvement loans	1963-76: CMHC (1975a, Table 31) 1955-62: CMHC (1965a, Table 31)	1970-6: Calculated by subtracting aggregate totals in one year from the subsequent year CMHC (various years) 1965-9: CMHC (various years)

APPENDIX C

Sources and calculations for Tables 4, 5, and 6

TABLE FOUR

Column (1): CMHC (various years)

Column (2): The series from 1961 to 1971 was published in Loyns (1972) but has since been declared confidential. The 1971-6 series was computed under the assumption that actual rents paid remained the same percentage greater than the CPI rent component as they had been from 1961 to 1971.

Column (3): The series was calculated assuming that quality improved by 2 per cent annually. The annual growth of column (2) was reduced by 2 per cent each year.

Column (4): A correct calculation of a CPI for renters would require data on the expenditure patterns of the target renter population in the base year. These data were unavailable. Instead a calculation was improvised. All the existing CPI weights and price indices were retained except that the shelter weight was multiplied by the revised rent component (column 3) rather than being divided into tenancy and ownership components.

Column (5): Ontario (1977c) and correspondence with the Ministry of Treasury, Economics and Intergovernmental Affairs, Ontario.

TABLE FIVE

Column (1): CMHC (various years)

Column (2): The weights of the five homeownership components were retained except that the new houses weight was boosted from 2.2532 to 2.7264 to reflect expenditure on land acquisition (21 per cent of the cost of the average NHA home is land cost); and further boosted to 2.8082 to reflect the 3 per cent average capital accumulation in the base year. Using these weights a new home-ownership index was computed. The property tax, repairs, and insurance weights

were multiplied by the price indices used in the CPI. The mortgage weight was multiplied by an index computed from the annual mortgage rate of interest in each year and the MLS sales price index (column 4). The new houses weight was multiplied by the MLS sales price index. The procedure assumes the MLS index to be the best measure of the increase in house prices (see the text for problems with it).

Column (3): CMHC (various years)

Column (4): Canadian Real Estate Association (1976) and correspondence with the Association.

Column (5): A correct calculation of a CPI for owners would require data on the expenditure pattern of the target population in the base year. These data were unavailable. Instead a calculation was improvised. All the existing CPI weights and price indices were retained except that the shelter weight was multiplied by the revised homeownership component (column 2) rather than being divided into tenancy and ownership.

Column (6): See source for Table 4, column (5).

TABLE 6

Column (1): Canadian Real Estate Association (1976) and correspondence with the Association.

Column (2): CMHC (1969a; 1975a)

Column (3): Calculated assuming that the mortgage was 80 per cent of the house price (the 1960-75 average under the NHA) and was for a twenty-five-year term.

Column (5): See source for Table 4, column (5).

Column (6): 1961 and 1965 income distributions were from Canada (1969b). 1971 income distribution was from Canada (1971) and 1975 income distribution from Canada (1975b)

Comparative static model of the housing market

The proposition that prices may rise faster than incomes can be proven with the following simple comparative static model of the housing market.

$$Q_D = f(p,y), \qquad \text{(demand function)}$$
$$Q_S = g(p), \qquad \text{(supply function)}$$
$$Q_S = Q_D, \qquad \text{(market equilibrium)}$$

where Q_D is quantity demanded, Q_S is quantity supplied, p is the price of housing, y is the total household income. Let η_{yd} be the income elasticity of demand, η_{pd} be the price elasticity of demand, and η_{ps} be the price elasticity of supply.

Totally differentiating the market equilibrium condition

$$(\partial f/\partial p)dp + (\partial f/\partial y)dy = (dg/dp)dp,$$
$$(\partial f/\partial y)dy = dp\,(dg/dp - \partial f/\partial p),$$
$$dp/dy = (\partial f/\partial y) \,/\, (dg/dp - \partial f/\partial p),$$
$$(dp/dy)y/p = ((\partial f/\partial y)y/p)/\,(dg/dp - \partial f/\partial p),$$

and given that

$$\frac{\%\text{ change in }p}{\%\text{ change in }y} = (dp/dy)y/p,$$

the rate of price change exceeds the rate of income change when

$$(\partial f/\partial y)y/p > dg/dp - \partial f/\partial p$$

$$> Q/p\,((dg/dp)p/Q - (\partial f/\partial p)p/Q),$$

$$(\partial f/\partial y)y/Q > (dg/dp)p/Q - (\partial f/\partial p)p/Q,$$

$$\eta_{yd} \qquad > \eta_{ps} - \eta_{pd}.$$

Sources and calculations for rental programs

ADMISSION CRITERIA FOR PUBLIC HOUSING

The criteria used to admit households to family public housing are reflected in the point rating reproduced below, obtained from the Tenant Placement Branch of the Ministry of Housing in Ontario.

The applicant's present situation is assessed and the degree of need is established by a personal interview conducted by a staff member once the application has been processed.

The conditions of need to apply for housing and the categories for points are as follows:

Residential qualifications
Points are awarded for the length of time the applicant has been a resident of Metropolitan Toronto up to ten years (0-10 points).

Overcrowding
It may be assumed that two persons to a bedroom, i.e. husband and wife, or two children of the same sex over five years of age, is the norm. When an applicant who is a householder has caused overcrowding by taking in lodgers, it is not reasonable to award overcrowding points (5 points).

In cases of gross overcrowding where the family is two or more bedrooms short, 15 points are awarded as a health factor.

Separated families
A family not all living under the same roof may be separated for several reasons. Points should be allotted when members of a family are required to live apart because of lack of suitable accommodation: children under temporary Children's Aid; husband is obliged to live away from family because his work is too far from present home; or accommodation is too small (15 points).

Health or medical factors
It is desirable to give some consideration to applicants who need to be housed for medical reasons. A doctor's letter is required. It is reasonable to distinguish between illnesses that are affected by housing conditions and illnesses that may be distressing but are unrelated to housing (15 points).

Number of dependants
This is self-explanatory. Points are given for the number of dependent children who are living with the applicant until such time as these children either commence work and leave school or home (0 - 10 points).

Percentage of income to rent
This should include day care or nursery school costs as part of the total rent cost for working one parent families. A statement from the school is submitted in all cases: 0-25%, 0 pts; 26-9%, 3 pts; 30-4%, 5 pts; 35-9%, 10 pts; 40-9%, 15 pts; 50 and over, 20 pts.

Abnormal financial commitments
Some families incur an excessive burden of debt through circumstances largely beyond their control. Prolonged illnesses, specialized medical care resulting from accidents, legal claims, etc. can be contributory factors (15 points).

Waiting period – without offer
People with reasonable needs can frequently be passed in the selection process by the continuing reception of new applicants with higher points. This is recognized by the awarding of points in this category. Where an applicant has been offered suitable accommodation and has refused for personal reasons, the points for waiting shall count from the date of such refusal, not from the date of application: one year, 1; two years, 2; three years, 4; four years, 6; five years, 8; six years, 10.

Structural conditions
A specific number of points can be awarded for any or every facility that is shared or in poor structural condition – includes overcrowding category (0 - 30 points).

Notice-to-vacate
If the applicant has a notice-to-vacate, the premises then cease to be a factor. Points are given for either poor structural condition or a notice-to-vacate, not both (30 points).

Maximum points 125.

INCOME FOR RENT CALCULATION

The definition of income for rent purposes is the aggregate gross income, in whatever form received, of all members of the family, or of an individual, where applicable,
excluding:
    — Earnings of children in regular attendance at recognized educational institutions; funds for tuition such as scholarships, bursaries, and contributions from non-resident family members.
    — Living-out or travelling allowances of the family head.
    — Earnings of a spouse up to $900 a year.
    — Earnings in excess $75 a month of all members of the tenant family other than the family head or spouse.
    — Income from any source (other than welfare payments) of a one-parent family up to $900 a year.
    — Capital gains, such as insurance settlements, inheritances, sale of effects.
    — Family allowances and allowances received in respect of a foster child.

SOURCE: Ontario (1975b)

PUBLIC HOUSING DATA

    — The source of data on units occupied, average age of head, average family income, and average rental payments for Metro family, non-Metro family, and non-Metro senior citizens' public housing projects was Ontario (1970).
    — In certain cases the average income of a project excluded those tenants in receipt of social assistance income. Social assistance income was incorporated with the income of non-socially assisted households by an averaging of incomes weighted by the number of tenant households of each type. The social assistance income figures, derived from the 1970 monthly pre-added budgets of the General Welfare Assistance Act (Ontario, 1970b) and Family Benefits Act (Ontario, 1970c) were averages of the assistance obtainable for various family sizes and age compositions.
    — In certain cases the average rental payment of a project excluded servicing costs. An increment of $21.00 was applied to standardize the rentals (Ontario, 1975b). Included in this figure was heat (based on Central Ontario costs), hot water, water, stove, and refrigerator.
    — The source of data on units occupied and average rents for Metro senior citizens' public housing projects was Metropolitan Toronto (1970). Average head ages and incomes of the nine Metro senior citizens' projects were assumed to be

distributed as the age and income of the one hundred and thirty-five non-Metro senior citizens' projects.

— The utility parameter *b* was estimated as the ratio of family rental expenditure to total family expenditures for each of the four relevant income classes utilized as recorded in Canada (1972a). The *b* parameter computed for each class is reproduced below:

Income ($)	Cobb-Douglas parameter
0 - 1,999	0.285
2,000 - 3,999	0.285
4,000 - 5,999	0.202
6,000 - 7,999	0.168
8,000+	—

— The market rent variable was estimated by regressing rent paid by non-subsidized renters with incomes ranging from $4000-$10,000 on bedroom composition for three city size classes (Canada, 1972c). The rent variable was incremented by 10 per cent if heat was not included. The rent variable was then deflated by 5 per cent to convert 1971 rents to 1970 values. The result was a matrix of market rents by number of bedrooms and city size for accommodation felt comparable to public housing.

The market rents used are reproduced below.

City size	Number of bedrooms		
	1	2	3+
100,000+	$132	$143	$156
30,000 - 99,999	107	112	119
1,000 - 29,999	89	91	94

CALCULATION OF MARKET RENTS ON ENTREPRENEURIAL AND NON-PROFIT HOUSING

An entrepreneur may either privately finance and rent a building or construct a similar building under the government program using a reduced rate mortgage and agree to controlled rents. Assume the total costs of constructing the building

are the same under both methods. The present value of the net income stream from the building handled privately can be calculated as in (13) and the present value if produced under the program as in (14). The building is assumed to have a fifty-year life and the mortgage to be amortized over thirty years.

$$\overline{PV} = \overline{R}_1 + \overline{R}_2(1+r)^{-1} + \overline{R}_3(1+r)^{-2} + ... + \overline{R}_{50}(1+r)^{-49}$$
$$- [E_1 + \overline{M}_1 + E_2(1+r)^{-1} + \overline{M}_2(1+r)^{-1} + ... + E_{30}(1+r)^{-29} + \overline{M}_{30}(1+r)^{-29}$$
$$+ E_{31}(1+r)^{-30} + E_{32}(1+r)^{-31} + ... + E_{50}(1+r)^{-49}], \quad (13)$$

$$PV = R_1 + R_2(1+r)^{-1} + R_3(1+r)^{-2} + ... + R_{50}(1+r)^{-49}$$
$$- [E_1 + M_1 + E_2(1+r)^{-1} + M_2(1+r)^{-1} + ... + E_{30}(1+r)^{-29} + M_{30}(1+r)^{-29}$$
$$+ E_{31}(1+r)^{-30} + E_{32}(1+r)^{-31} + ... + E_{50}(1+r)^{-49}], \quad (14)$$

where $\overline{PV}$ is the present value of the net income stream of a building financed and rented privately, $\overline{R}_i$ is the market rental in the ith year, E_i is the expense in the ith year, $\overline{M}_i$ is the mortgage payment in the ith year (principal and interest of a privately raised mortgage, PV is the present value of the net income stream of a building constructed under the government program, R_i is the rental in ith year under the government program, and M_i is the mortgage payment in the ith year (principal and interest) of the government mortgage.

Assuming that the rents under the program and the market rents are constant over time and that the owner's equity in each project is identical, the condition that the owner's rate of return on the private project is equal to the return on a government project may be expressed as

$$\overline{PV} = PV,$$

$$[\overline{R}_1 - R_1] \left\{ [1-(1+r)^{-50}] / [1-(1+r)^{-1}] \right\} = \left\{ [\overline{M}_1 - M_1] \ [1-(1+r)^{-30}] / [1-(1+r)^{-1}] \right\}, \quad (15)$$

$$\overline{R}_1 - R_1 = [\overline{M}_1 - M_1] \left\{ [1-(1+r)^{-30}] / [1-(1+r)^{-50}] \right\}.$$

The difference between the market rental and the government project rental is a function of the difference between the mortgage payments in the two situations, the discount rate, and the term of the mortgage. The approach is of

course highly simplified. The cash flow patterns will be very different under the two mortgages, and the government programs permit much lower equity/value ratios.

In 1970 the conventional mortgage rate was 10.45, the entrepreneurial and non-profit rate was 7.88, and the discount rate (assumed to be the rate on Government of Canada bonds ten years and longer) was 7.91 (CMHC, 1970a, Table 75). The difference $\bar{R}-R$ would be $15.92 monthly for every $10,000 in mortgage loan. The average loan per unit under the two programs over the years, weighted by the number of units built in each year, was $9076, which implied that the difference was $14.46 monthly or $173.47 annually.

This difference would vary for each project each year depending on the loan per unit and the interest rates. Only an average could be calculated here.

Sources and calculations for ownership programs

RESIDUAL LENDING PROGRAM

The market value measure of benefit was calculated as the difference between the annual cost of owning the house using a private market mortgage and the annual cost under the government mortgage. The annual private cost is $MV(m+d+t+a)$ and under the program it is $[TL(\bar{m}+d+t+a) + CF(m+d+t+a)]$, as discussed in chapter 3, where MV is the market value of the home, m the private market mortgage rate, $\bar{m}$ the residual lending mortgage rate, TL the total government mortgage loan, and CF the sum of secondary financing and homeowner's equity.

The tape provided by CMHC provided data on household income, age of the household head, the total government loan, secondary financing, the homeowner's equity, and the interest rate on the government mortgage loan. MV was assumed to be the sum of TL and CF. The private mortgage rate was taken from CMHC (1971a), and $(d+t+a)$ was assumed to be 0.03, based on data in Canada (1969c). The recorded homeowner's income was raised by the annual interest earnings on equity under the assumption that this potential income was not measured in recorded income.

The general formula for the calculation of the consumer's surplus measure of benefit can be calculated like that already computed in the general case for a rental program (see chapter 3). Modified for the homeownership model (with no taxes), the transfer T that would leave the household as well off is

$$T = [A\bar{H}/b]^b \left\{ [(Y + S\bar{m}) - \bar{A}\bar{H}] / (1-b) \right\}^{1-b} - (Y + Sm), \tag{16}$$

where A is the market annual cost per unit of housing stock, $\bar{A}$ the annual cost under the program, $\bar{H}$ the number of units of housing stock purchased, and S the

homeowner's equity. The term $A\overline{H}$ has been computed above as the annual market cost of the housing. The term $\overline{A}\overline{H}$ was calculated as MV $(\overline{m}+d+t+a)$, a slight modification from that used above in order to calculate expenditure on other commodities under the program (i.e. $Y + S\overline{m} - \overline{A}\overline{H}$) consistent with the diagrammatic presentation in Figure 5.

The b parameter of the utility function was separately computed for each household as $[\text{MV}(\overline{m}+d+t+a)] / (Y + S\overline{m})$. This assumed that the chosen point under the program was an equilibrium tangency.

HOME OWNERSHIP MADE EASY PLAN

The market value measure of benefit was calculated as the difference between the annual cost of ownership with and without the program. The annual cost without the program is MV$(m+d+t+a)$, and the annual cost with the program is TL$\overline{m}$ + LP + Sm + MV$(d+t+a)$, where LP is the lease payment on the land (see above for the other variables).

A sample of 388 HOME lots in ten subdivisions was compiled from records of the Ministry of Housing. The lots were approved in 1974. These records provided data on the household income, age of the household head, house value, amount of mortgage, interest rate on the mortgage, lease payment, book value of the land in 1974, and market value of the land in 1975. The market value of the land in 1974 was obtained by deflating the 1975 value by the average land cost increase between 1974 and 1975 of an NHA home in that community (obtained from CMHC). The market value of the house was the sum of the land value and the house value; equity was the house value less the mortgage. The market rate of interest and $(d+t+a)$ were found as before. The recorded income was raised to include return on equity.

The consumer's surplus measure T was calculated as

$$T = \left\{[\text{MV}(m+d+t+a)] / b\right\}^{\,b} \left\{[(Y+S\overline{m}) - [\text{TL}\overline{m} + \text{LP}+S\overline{m}+ \text{MV}(d+t+a)]] / \right.$$
$$\left. (1-b)\right\}^{\,1-b} - (Y + Sm). \quad (17)$$

The b parameter of the utility function could not be calculated from these data because the chosen point under the program was not likely to be a point of tangency. The b value for each income class was assumed to be equal to the average b value for that income class of participants in the residual lending program.

ASSISTED HOME OWNERSHIP PROGRAM

The market value measure of benefit was calculated as the difference between the annual cost of ownership without and with the program. The cost without is $MV(m+d+t+a)$. The cost with is $TL\overline{m} - RG - FG + Sm + MV(d+t+a)$, where RG is the interest-reduction grant and FG the additional grant (see above for the other variables).

The tape provided by CMHC of all AHOP approvals in Ontario in 1974 contained information on the household's income, age of the household head, total mortgage loan, mortgage rate of interest, interest-reduction grant, additional federal grant, secondary financing, and homeowner's equity. The market value was calculated as the sum of the mortgage, secondary financing, and equity. The market rate of interest and $(d+t+a)$ were found as before. Income was boosted to record return on equity.

The consumer's surplus measure was calculated as

$$T = \left\{ [MV(m+d+t+a)] / b \right\}^{b} \left\{ [(Y+S\overline{m}) - [TL\overline{m} - RG-FG+S\overline{m}+MV(d+t+a)]] / (1-b) \right\}^{1-b} - (Y+Sm). \quad (18)$$

The b parameter of the utility function for each income class was again assumed to be equal to the average b parameter of participants in the residual lending program in that income class.

APPENDIX G

Sources and calculations for income tax provisions

IMPUTED INCOME EXEMPTION

The market value benefit measure was the difference between the annual cost of ownership without the exemption and the cost with the exemption, or the additional tax payable if the exemption were removed with no change in household choices. For an owner without a mortgage the annual cost with no exemption is $Q[Pmx + P(d+t+a) + Pm(1-x)]$; with the exemption it is $Q[P(d+t+a) + Pm(1-x)]$. For an owner with a mortgage the annual cost with no exemption is $[Smx + Sm(1-x) + QP(d+t+a) + (QP-S)m]$, and with the exemption it is $[Sm(1-x) + QP(d+t+a) + (QP-S)m]$. In all cases the market value measure simplifies to Smx (or Emx using the notation of the text).

The HIFE survey of 1971 (Canada, 1972c) provided data for 2870 Ontario homeowning households on household income, age of household head, market value of the home, total mortgage debt outstanding, and taxes paid by the household. The taxes paid by household were used in conjunction with the federal and Ontario income tax schedules to compute the marginal tax rate of the household. When the tax on imputed income was calculated, provision was made for crossing tax brackets. If imputed income were ever taxed it would be levied not on a household but on an individual. However, the calculations here were done by household. The conventional mortgage rate of interest in 1971 was found in CMHC (1971a).

The formula for the consumer's surplus measure of benefit, as before, is modified to deal with the existence of income taxes:

$$T = \left\{[\text{MV}(m+d+t+a)] / b\right\}^{b} \left\{[(\overline{Y}+Sm(1-x)) - \text{MV}[m(1-x)+d+t+a]] / (1-b)\right\}^{1-b} - [\overline{Y} + Sm(1-x)]. \quad (19)$$

Equation (19) is for homeowners without mortgages. For homeowners with mortgages a similar calculation can be undertaken that reduces to *Emx*. The $(d+t+a)$ value was assumed to be 0.03, based on Canada (1969c).

The differential benefits were distributed according to recorded income, not recorded income plus imputed income as is frequently done. The latter procedure was rejected so that the benefits would be linked to households as they are identified in the public eye, namely, by recorded income. It can be shown, therefore, that many benefits flow to the apparently low-income group (especially the elderly), although in fact these groups may not be poor when imputed income is added to reported income. The benefits were distributed by the latter procedure, and approximately similar conclusions resulted as were drawn in the text, although the average benefit of a marginal change fell for each income class.

CALCULATION OF *b* PARAMETER FOR IMPUTED INCOME EXEMPTION

The *b* parameter of the Cobb-Douglas utility function was separately calculated for each household as the ratio of housing expenditure to income in the presence of the exemption:

$$b = [\text{MV}(m(1-x) + d+t+a)] / [\overline{Y} + Sm(1-x)]. \tag{20}$$

For households with valuable homes and low incomes this calculation could be greater than one (the housing is being depreciated in violation of the assumptions of the model). In such cases *b* was calculated as

$$b = [\text{MV}(m+d+t+a)] / [\overline{Y} + \text{MV}(m+d+t+a)]. \tag{21}$$

ALTERNATIVE ASSUMPTIONS TO CALCULATE THE RENT REDUCTION DUE TO DEPRECIATION PROVISIONS

The assumptions regarding each variable used to calculate the rent reduction are outlined below (see equations 9-12 in the text).

	Variable							Rent
	z	a_1	w	d	m	c	n	reduction (%)
High	0.5	0.8	0.10	0.05	0.094	0.0	50	6
Medium	0.4	0.5	0.075	0.035	0.094	0.1	50	3
Low	0.4	0.4	0.05	0.025	0.094	0.2	50	2

RENTAL DEPRECIATION PROVISIONS

The market value measure was the difference between the cost of rental accommodation without the depreciation provision and with the provision. It was assumed that rents fell 3 per cent because of the provisions and therefore that rents would rise by $0.03 / (1-0.03)$, or 3 per cent, if the provisions were removed. The market value measure was 0.03 RT, where RT is annual rent payments.

Data on a sample of 2400 renting Ontario households were obtained from the HIFE survey (Canada, 1972c) on household income, age of the head of the household, and monthly rent paid. Only unsubsidized renters in separate dwelling units were included.

The consumer's surplus measure was calculated as

$$T = \left\{[1/(1-0.03)]\text{RT} / b\right\}^{b} [(Y - \text{RT})/(1 - b)]^{1-b} - Y. \tag{22}$$

The b parameter was calculated separately for each household as

$$b = \text{RT} / Y. \tag{23}$$

If the calculated b was greater than one, b was set equal to 0.99.

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17 Housing Programs and Income Distribution in Ontario

GEORGE FALLIS

In the last twenty-five years the government's role in housing has expanded considerably. Where the government used to act merely as banker and facilitator of the private sector it is now expected to redistribute resources and intervene actively in the housing market. This book examines the evolution of Canadian housing policy and takes a detailed look at its effect on income distribution in Ontario.

Using a differential incidence approach and a consumer's surplus concept, the book provides a coherent framework for examining diverse policies. It discusses in detail the effects of rental and ownership housing programs, including the residual lending program, the Home Ownership Made Easy plan, and the Assisted Home Ownership Program, as well as provisions of the income tax laws dealing with housing. The book also compares ownership and rental costs with incomes and demonstrates that, contrary to widespread belief, only householders purchasing a first home have been seriously affected by rising shelter costs.

The author concludes that while the individual programs are all progressive compared to the neutral alternative (although regressive when compared to a shelter allowance), housing policy as a whole displays severe horizontal and vertical inequity.

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